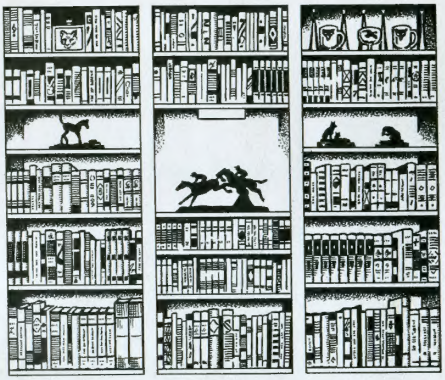

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SUPPLEMENT

TO

FRANK FORESTER'S

FISH AND FISHING

OF THE

UNITED STATES

AND

BRITISH PROVINCES OF NORTH AMERICA.

BY

WILLIAM HENRY HERBERT,

AUTHOR OF

'FIELD SPORTS OF NORTH AMERICA,' 'FRANK FORESTER'S ...' ETC.

NEW-YORK,

STRINGER & TOWNSEND,

1850

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222 BROADWAY.

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3. BLACK SILVER PALMER.
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INTRODUCTORY REMARKS.

On coming to revise the body of this work for a second edition, it was found, as might naturally be expected in a book embracing so large a field, that some errors had crept in, of commission, but yet more of omission; that some opinions with regard to fishes, unknown to the writer through his own observation, quoted from others, are, as verified by his own experience, incorrect; and that some few things stated as facts, when tried by the same test, are incorrect.

To set these right in the body of the work, would have rendered it necessary to reprint and re-stereotype the whole volume; as, by the insertion of new matter, the paging would have been all thrown out of order, and many whole pages would have been entirely destroyed, merely in order to rectify a single word.

I have therefore judged it best to throw what new information I have gained, into the form of a Supplement; embodying therein the correction of all erroneous opinions which, through want of information, or misinformation, I have fallen into; and adding farther instructions with regard to the implements, and the art of angling.

On Trolling for Lake Trout, and on Fishing with the Fly, very considerable additions will be found in this edition; as well as a Table explaining the seasons, bait, &c., of the principal salt-water fishes of our waters.

I had hoped to have been able to insert some information concern-

ing the more interesting sea-fish of the Southern States; but having waited as long as it was possible, for a number of specimens of which I had a promise from a friend in Charleston, South Carolina, I am very reluctantly compelled to go to press without that advantage, and am precluded from doing much more than naming what I learn to be the best and gamest of the southern species.

In this Supplement, I shall adhere to the plan adopted in the Volume, of dividing it into two parts, one treating of the structure, habits, and classification of the fishes; the other of the implements, the materials, and the art of angling.

The Salmon family will claim—as of the Volume itself, so of the Supplement also—the larger portion. Of this interesting group, the proper Salmons, I have herein inserted descriptions of six new species peculiar to the Columbia and other rivers of the Pacific coast, now growing into so great importance; and of the sub-genus *Coregonus*, of the same group, I have two new varieties from the north-western lakes. Concerning the several varieties of Lake Trout, I have cause materially to modify opinions expressed heretofore; and have succeeded in collecting much new information as to their habits, quality, instincts, and the mode of capturing them.

To the various friends who have assisted me with advice, information, and friendly criticism, I take this opportunity of again expressing my gratitude, and of putting it on record how much is due to them of the increased value of this edition.

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PART I.

THE

GAME FISHES

OF

North America.

ABDOMINAL
MALACOPTERYGII. SALMONIDÆ.

THE SALMON.

THE COMMON SALMON—THE TRUE SALMON.

Salmo Salar; Auctorum.

I STATED in the body of this work, that the True Salmon was wont, in former years, to run up into Seneca, Cayuga, and others of the small lakes of central New York, and expressed a doubt whether it was not now prevented from doing so, by the obstructions in the Oswego river.

In the course of a visit to that interesting region, during the past autumn, I had an opportunity of verifying this doubt; and I found, as indeed I expected, that the True Salmon has ceased to exist in those beautiful waters.

It is with great pleasure, however, that I lay before my readers an enactment for the preservation of that noble fish, just passed by the Supervisors of the county of Oswego, in conformity with the act of the State Legislature, committing the care of Game, and the passing of Game laws, to those Boards throughout the country.

This act is precisely what it should be, and reflects the highest credit on the liberality, wisdom, and energy of the Board which enacted it. I only regret that its provisions extend only to a single river; but I trust that this defect will be amended, and that the Oswego River, and the Seneca, Cayuga, and other outlets will receive the same privilege, which would doubtless lead to the speedy re-establishment of the Salmon in those lovely and limpid waters:

LAW FOR THE PRESERVATION OF SALMON.

PUBLISHED BY ORDER OF THE BOARD OF SUPERVISORS.

AN ACT for the preservation of Salmon in the Salmon River and Lake Ontario contiguous thereto:—Passed Dec. 12th, 1836.

The Board of Supervisors of the County of Oswego, convened at Pulaski, in the said county, do enact as follows:

§ 1. It shall not be lawful for any person to fish for, catch, or take, any Salmon, with any net, seine, weir, of any kind or description, in any of the waters of the Salmon River in said county, or in the waters of Lake Ontario, within one mile of the mouth of said river, between the first day of April and the twentieth day of October, in any year after the passage of this act. And any person offending herein, shall, for every such offence, forfeit and pay the sum of one hundred dollars, to be recovered by action, with the costs of suits, by and for the use of any person who will prosecute for the same before any justice of the peace in and for the said county of Oswego.

§ 2. And be it further enacted, That the Salmon so caught and taken in any of the waters aforesaid, in violation of the provisions of this act, together with any seine, net, weir, or traps so used or set for use, in violation of this act as aforesaid, shall be forfeited to and may be immediately taken into possession of, and carried away, by any person who shall find said net, seine, weir, or trap, while so used or set for use as aforesaid; and such person may and he is hereby authorised to keep, sell or otherwise dispose of the same for his own use and benefit, as to him may seem fit and proper. And any such weir or trap which shall be affixed to any dam or other obstructions in any of the waters of Salmon River, or which shall be set or secured to the bottom of said river or lake aforesaid, shall be, and the same is hereby adjudged a public nuisance, and may be abated by any person summarily without process of law, other than the provisions of this act.

§ 3. And be it further enacted, That the owner or owners of mill or other dams which are now erected across the said Salmon River, or any branch or channel thereof, so as to obstruct the usual course of the Salmon in going up said river, who shall not, on or before the first day of June, in the year one thousand eight hundred and fifty, have altered such dam by constructing an apron or slope on the lower side thereof, extending from the top of said dam to the bottom of the river below, said apron or slope to be not less than twenty feet wide, with a smooth and even surface, and sloping at an angle of forty-five degrees with the horizon, and to be located in or as near to the main channel of the river as circumstances will permit, so that Salmon may freely pass into the waters above such dam, shall respectively forfeit and pay to the town in which such dam is located, the sum of one hundred dollars, twenty-five dollars of which to be paid to the complainant, and the remaining sum of seventy-five dollars to be appropriated to the support of the poor of such

town, and to be received by the overseer or overseers of the poor thereof, in the manner provided for in the first section of this act. And in case such dam shall not have been so altered within the time above-mentioned, such dam shall be adjudged a public nuisance, and may be abated in the same manner as is provided in the second section of this act. And further, that any mill or other dam which shall be hereafter erected across said river, or any branch or channel thereof, shall be constructed with an apron or slope as aforesaid. And any owner or owners of such dam, which shall be hereafter constructed across said river as aforesaid, who shall neglect or refuse to comply with the provisions of this section, shall respectively forfeit the same penalty, to be prosecuted for, received and applied, as is herein before provided in this section.

§ 4. And be it further enacted, That it shall not be lawful for any person to fish for, catch, or take Salmon, while passing over such aprons or slopes, or within the distance of four rods of said slopes, aprons or dam.; And any person offending herein, shall forfeit and pay the sum of twenty-five dollars, to be recovered and applied in the manner provided for in and by the first section of this act.

§ 5. And be it further enacted, That nothing contained in the first three sections of this act, shall be so construed as to prevent the fishing for, catching, or taking Salmon with a spear, in the waters aforesaid, by the owner or owners, lessee or lessees, and their lawfully authorized agents of the lands over which the waters of said river flow, or adjoining the waters of Lake Ontario aforesaid.

§ 6. And be it further enacted, That this act shall take effect on the first day of January, eighteen hundred and fifty.

A. L. Thomason, Chairman.

I earnestly recommend the passage of similar laws to this, by the Legislatures of the various Eastern States, especially by that of Maine, in reference to every river eastward, at least, of the mouth of the Kennebeck, as the only method by which the speedily approaching extinction of the Salmon can be prevented.

I have no doubt, however, that if the same law were passed by the Legislatures of Connecticut and New York, with regard to the fine river which gives name to that first State, and to the noble Hudson, coupled with an absolute prohibition to take or destroy the Salmon for the space of five years, that this, the king of fishes, might be re-introduced into those waters, by the adoption of the simple method described at page 60 *et sequentes* of this volume.

And I take this opportunity of stating, that I have good hope of making such arrangements as will enable me to procure, in this coming spring, such supplies of the Salmon fry, in the state which admits of

their transportation from Nova Scotia, as will suffice to establish the possibility of the undertaking. It is my intention, should I succeed in obtaining any support or encouragement from the Legislature of New Jersey, to make the experiment in the tributaries of the Passaic; and should it be successful, I can only add that it will give me but too much pleasure to assist any gentleman of spirit in procuring the means of restocking any waters on which they may reside, with this most game and noblest of fishes.

THE BROOK TROUT.

THE COMMON TROUT.

Salmo Fontinalis; DeKay.

With regard to this very beautiful and excellent fish, I have very little to add to what is recorded in the former part of this volume, at page 86 *et seq.*

I have ascertained, however, as a fact, what I mentioned there as a mere surmise, that in some places and on some occasions the Brook Trout of America are taken of a very much larger size than is generally imagined.

At the Sault St. Marie, which I visited this autumn, although too late for Trout-fishing in its perfection, the average run of fish is exceedingly large; as also in the Garden River, which falls into the St. Mary's, a few miles below the beautiful rapid I have mentioned.

Three and four pounds is by no means an unusual weight; but the most important fact is this, that some years since, the commandant of the United States' Fort, at the Sault, offered a reward to any Indian who should bring in a Brook Trout of *ten pounds'* weight. The result was, that many were brought in of six and seven pounds and upward, and at last one monster which actually weighed eleven pounds and some ounces.

There is no question about this fact, or of its being actually a red-spotted Brook Trout, as distinguished from the Namaycush or Siskawitz; for the whole affair originated from a desire to investigate and ascertain the fact of natural history, on the part of the distinguished officer in question, and the fish was submitted to a thorough scrutiny and scientific examination before the premium was awarded.

The question may therefore be regarded as settled, that, in favorable situations and peculiar waters, the Brook Trout grows to a size much larger than is usually supposed to be its utmost limit, possibly even up

to fifteen or twenty pounds, though the average of the fish is undeniably below a pound.

There can, I am now satisfied, be no doubt that the very large *red-spotted* fish described by Dr. Smith, under the title of *Hucho*, as existing in many of the lakes of New England, is nothing more, as I surmised in the first instance, than an enormous and overgrown Brook Trout, very large specimens of which are constantly brought into the Boston markets from the interior of New Hampshire. The wonderful effect of different waters on the growth, coloring and flavor of fish has been already mentioned; and I shall have yet more to say on this subject when I come to speak of the Lake Trout.

I will only here farther observe, that on recent information from an undoubted authority, I have reason to believe that I have overestimated the average weight of the Brook Trout taken in Carman's Creek on Long Island; a very highly accomplished angler, who fishes those waters constantly, having assured me that the average is not *now* above three-fourths of a pound. There is no question, that in waters so assiduously whipped as those of Long Island, not only the number but the size of Trout must necessarily decrease. For farther instruction on Fly-fishing, &c., I must now refer my reader to the Second Part of this Supplement, where he will find, I trust, all that may be necessary to supply what was omitted above, both as regards doctrine and practice, art and implements, necessary for the gentle craft.

THE GREATEST LAKE TROUT.

MACKINAW SALMON—NAMAYCUSH.

Salmo Amethystus; Mitchil, DeKay.—*Salmo Namaycush;* Pennant, Richardson.

Of this fish—concerning which, in the body of the work, I wrote chiefly on the report of others—in the course of a recent tour to the upper lakes, I had ample opportunities of judging. I saw certainly hundreds of specimens, none below seventeen or eighteen pounds weight, and many up to forty and forty-five. They are so abundant on Lake Huron that the Indians sell them willingly for a quarter of a dollar each, without reference to size.

The flesh of this fish, as an article of food, is exceedingly *bad;* it is coarse, flabby, and at once rank and vapid, when fresh, if such a combination can be imagined. On one occasion, a very large fish of this species having been served up boiled one day, and pronounced, by a large party of good epicurean judges, less than indifferent, a portion was dressed cold on the following day with salad, and was so insufferably rank, that it was incontinently sent from the table as uneatable.

When salted and smoked, or preserved in salt pickle, it is somewhat better, though not at all equal to its sister fish the Siskawitz.

I should be willing to assert that the average of this great fish is fully up to twenty pounds. I will here add, that I have reason to believe that the opinion hazarded on report of others, that the Great Mackinaw Trout is the *liveliest* of his species, is entirely erroneous; and that, from all the inquiries I made among Indians, hunters, and scientific anglers on the lake, I am inclined to disbelieve that this or the next described fish can be taken either with the fly or the spinning-minnow in trolling. If ever they are taken in either of these modes, or with the spoon or squid, it is contrary to their usual habit; and may be considered a freak of the fish, and one of so rare occurrence as to render

it a very unprofitable attempt for the angler to fish for them by any of these modes.

A coarse, heavy, stiff rod—a long and powerful oiled hempen or flaxen line—on a large winch, with a heavy sinker, a cod-hook baited with any kind of flesh, fish, or fowl—but, best of all, with a piece of the belly of its own species, is the most successful if not the most orthodox or scientific mode of capturing him.

Its great size and immense strength alone give him value as a fish of game; but when hooked, he pulls strongly and fights hard, though he is a boring deep fighter, and I think *never* leaps out of water, like the True Salmon or the Brook Trout.

THE SISKAWITZ.

NORTHERN LAKE TROUT.

Salmo Siskawitz; Agassiz.

This fish, like the former species, came frequently under my eye during my late northern tour; and I rejoice in the possession of a barrel of him in his pickled state, which I procured at the Sault St. Marie, on the strength of which I can recommend him to all lovers of good eating as the *very best salt fish* that exists in the world.

He is so fat and rich, that when eaten fresh he is insufferably rank and oily; but when salted and broiled, after being steeped for *forty-eight* hours in cold water, he is not surpassed or equalled by any fish with which I am acquainted.

Since my return, he has been tasted by very many gentlemen of my acquaintances, and by no one of them has he been pronounced anything less than superlative.

His habits closely resemble those of the Namaycush; and like him I cannot learn that he ever takes the fly, or is ever taken by trolling. I do not, however, believe that either of these methods are often resorted to for his capture, although there are many scientific fly-fishers about the Sault, and the Brook Trout of those waters are principally taken with large and gaudy lake-flies.

The average weight of the Siskawitz does not exceed four or five pounds, though he is taken up to seventeen. His excellence is so perfectly understood and acknowledged in the Lake Country, that he fetches double the price per barrel of his coarser big brother, the Namaycush; and he is so greedily sought for there, that it is difficult to procure him even at Detroit, and almost impossible at Buffalo.

I believe none were ever brought to New York, previously to the barrel which I brought down with me from the Sault. I am now able to supply, from personal inspection, what I was compelled unavoidably to

omit above, the number of rays in the various fins. They are as follows:

First dorsal twelve branched rays, second dorsal adipose, pectorals fifteen, ventrals ten, anal nine, and caudal twenty-one perfect, besides several rudimental branched rays; in all of which it differs from the Namaycush. It is, I think, on the whole, a bluer and less distinctly spotted fish than the Namaycush.

As a sporting fish, it is, I am of opinion, of small value; but as an article of cuisine—he is valuable, or rather, and that not hyperbolically, invaluable.

ABDOMINAL
MALACOPTERYGII. SALMONIDÆ.

THE LAKE TROUT.

Salmo Confinis; DeKay.

Concerning no fish have I seen occasion so greatly to alter my expressed opinions—founded chiefly on the opinions of others, and, where original, formed from examination of fish taken in the waters of the Eastern States, and in Lakes George and Champlain, in none of which is it either a game fish, or in my opinion a good fish.

I still doubt greatly whether there be not two distinct species of Lake Trout, one quite peculiar to the small lakes of New York. Certainly I never saw or tasted any Lake Trout similar in appearance, or equal in flesh and flavor, to those which I ate at Geneva, and which were subsequently sent down to me in ice, by my friend Mr. Mandeville, of that city.

The description of these fish exactly tallies with the account of the red-fleshed Lake Trout of Hamilton county, where I have never fished, being deterred therefrom by dread of that curse of the summer angler, the black fly, which is to me especially venomous.

A letter which I insert below, from a capital angler, who has caught this fish in the far-famed Louis Lake, agrees exactly with the characteristics of the Seneca Lake Trout, but not with his habits; as I have the best authority for stating that in Seneca Lake they are never taken either by the fly or by trolling; although in Crooked Lake, immediately adjoining it, they are constantly caught by trolling for them "with shiners strung upon the hook, and drawn head foremost, with a hook leaded to sink twenty to thirty feet."

In Seneca Lake they are taken on set lines, varying in depth from twenty-five to four hundred feet, concerning which method more under the head of Lake Fishing.

The following is an accurate description of one of the fish sent to me from Seneca Lake. It differs, as will be seen, in many respects,

of structure, shape, and color, from the account quoted at page 117, from Dr. DeKay's Fauna of New York—almost widely enough, in my opinion, to justify its erection into a separate species:

Dental system.—A double row of strong hooked teeth on the labials and palatines of the upper jaw. The vomer perfectly smooth and toothless. In the lower jaw, a single row of strong hooked teeth on the labials, and a double row of smaller size on the tongue.

Branchiostegous rays, eleven on the right side, thirteen on the left.

Pectoral fin-rays sixteen, ventral ten, anal twelve, dorsal thirteen, caudal twenty-seven.

In all these respects it differs from DeKay's *Salmo Confinis*. Whole length, nineteen and a half inches. Head, four inches to the lower margin of the interoperculum. Eye, one inch and a half from tip of snout. Origin of the ventral fin, nine inches and a quarter; of the anal, thirteen; of first dorsal, eight and a half; of the second dorsal, fourteen, from the tip of the snout.

Depth of the fish at the origin of first dorsal, three inches and three-fifths; breadth of back two inches.

Curvature of the belly greater than that of the dorsal outline. Color of the head dark bluish black. Irides silvery, gill-covers silvery with nacrous reflections. Back and sides, above the lateral line, beautiful glossy cærulean blue, mottled with bright silvery spots of the size of large duck-shot; below the lateral line the silvery spots are larger, and the ground lighter blue; belly pure silver.

Pectoral fins pale yellowish green, ventrals and anal greenish, very faintly tinged with red. First dorsal greenish transparent, veined with black; second dorsal silvery grey, slightly mottled; caudal greenish grey, mottled with black.

A very beautifully formed fish, more tapering than the Namaycush or Siskawitz, with the small head, and much both of the form and lustre of the True Sea Salmon.

Flesh rich orange buff, very firm, highly flavored and delicate. This fish, and another rather larger, but otherwise exactly agreeing with this, were eaten at my table by a party of six gentlemen, as good judges of good eating as any with whom I am acquainted, and were unanimously pronounced *better than Brook Trout! better than True Salmon! the best fish in the world!*

Singularly enough, at the very time that my opinion was becoming changed with regard to this—I now think *excellent* fish, I received a long and most kind letter from the accomplished fisherman to whom I had applied for information in regard to Hamilton county fishing, differing from the opinion given in the bulk of this volume, which I had just before discovered to be faulty.

I have no hesitation in laying this verbatim before my readers, as I have no doubt it is thoroughly correct in all respects, both as to the habits and quality of the Hamilton county Lake Trout, with which I am satisfied that the Lake Seneca variety is identical; the variation in the habits of the fish in the different localities being ascribable to the different qualities of the water which they inhabit.

The average weight of the Lake Trout in Seneca Lake is much as is stated by my kind correspondent—that is to say, under *four* pounds, and they very rarely exceed seven.

This letter was written at my request, for the purpose of pointing out, commenting upon, and correcting any errors of omission or commission which he had discovered in my work; and I can only express myself equally obliged by the candor and kindness of the criticism.

Had I permission to give the name of the writer, I am well aware that in every angler's opinion it would add immensely to the value of his remarks as authority; but it will suffice that I should assert that he is, of my own knowledge, one of the best fly-fishers in the United States.

ORIGINAL COMMUNICATION ON THE LAKE TROUT.

"The average weight is eight or ten pounds."

This is an extract from the New York Fauna of Dr. DeKay. Now, I venture to assert that Dr. DeKay never wet a line in the waters of Hamilton county, and that "the propensity to exaggeration in everything in relation to aquatic animals," induced his informant to make the above statement. I boldly assert that the average weight of Lake Trout is not four pounds.

An eight or ten pound fish is considered an unusually heavy fish. I will give you my experience. In May, 1848, I spent eleven days in Hamilton county, in company with a friend, and that friend an old Hamilton county troller. We faithfully fished in Lake Pleasant,

Round Lake, and the far-famed Louis Lake. We killed about two hundred pounds' weight of fish. I killed one of sixteen pounds, one of nine pounds and a quarter, and two of five pounds each. My friend did not kill a single fish heavier than three pounds and three quarters, neither did I, save those just mentioned; and I would and do say, that our fish did not average three pounds, the great majority being two pounders.

At the same time two friends fished Piseco Lake and Rackett Lake; the heaviest fish killed by them was eleven pounds; and I do not believe that they took another of greater weight than four pounds; at all events, we beat them all to smash in weight and number. So much for the average weight.

The wholesale assertion on your 118th page, that they *never* rise to the fly, should be qualified. It is not correct that they "*never* rise to the fly." They frequently do.

The nine pound and a quarter Lake Trout above referred to, was killed by me with an artificial fly. The facts are these:—On the 28th of May, 1848, I was fishing on Louis Lake. I was using a trolling-rod and a small Trout-rod, casting with one and trolling with the other. Upon my trolling-leader I had two flies; and when my oarsman was in the act of pulling round a projecting elbow of wood, I reeled up, to avoid contact with a fallen tree, and just as my first fly trailed on the surface of the water, the fish broke or rather dashed at it; I struck him instantly, and away he went, with so much velocity that I had hard work to keep my line from overrunning, not having a click-reel; I fortunately thumbed the reel, and passed my Trout-rod to the oarsman, and then had fair play; and I assure you I never had hold of a fish of the same size, that showed more game, power or endurance. He never sulked for an instant; and the only difference which I could discover in his mode of action from a Salmon, was that after being struck, he did not show himself, or leap. Had I hooked this fish with my light rod, I would not have killed him under an hour; and, indeed as it was, he was not "half gone" when Cowles, my guide, put the gaff into him. This fish rose in about eight feet water, and took me twenty-five minutes to kill him; and I never worked harder in my life to secure a fish, for you may imagine that I was anxious to secure a Lake Trout, hooked as I have described.

On the same page, you quote from Dr. DeKay, that this Trout has "the coarseness of the Halibut, without its flavor;" and subsequently assert, as your own opinion, "that this is the most worthless of all the non-migratory species." I think that you are mistaken—my reasons presently. On page 274 to 276, you also use the following expressions: "These great, bad and unsporting fish," &c., "with a bullet at the end of two hundred yards of line, run *rapidly* through the water." "He is very indifferent eating."

I disagree with you. "Every man to his taste." "What's one man's meat is another man's poison." I prefer a Lake Trout to the best Brook Trout—*don't laugh!* Now for my proof. To my knowledge, Lake Trout are preferred at John C. Holmes', the proprietor of Lake Pleasant House, to anything you can lay on the table. The nine pound and a quarter Trout to which I have before alluded, was eaten in this city, at the house of a mutual friend of ours, and was declared to be a glorious morsel. The sixteen pound and a half Trout was eaten at a friend's house in Broadway; seventeen persons, myself among them, partook of it, and I never heard anything surpass the praise of *all;* and for myself, let me say, that I never tasted a finer fish. He was boiled and eaten with plain drawn butter, or as housekeepers and cooks call it, I believe, "parsley and butter;" and during my sojourn in the woods, my friend and myself invariably preferred and had the small Lake Trout cooked by our guides. If it be "very indifferent eating," then I am easily pleased, and every person with whom I have spoken on the subject are no judges of fish flesh.

Have you fished for Lake Trout in Hamilton county? I presume not, for most assuredly you labor under a mistake as to the "*modus operandi.*"

Your instruction on lines, 9, 10, 11, page 274, is incorrect, and tends to lead the novice astray. Our friend of the "Spirit" is much nearer the mark, but the instruction is defective, as you have quoted it. I believe that no portion of your work was more anxiously looked for, than your views, direction and instruction upon fishing for Lake Trout. Hamilton county is becoming known; and as the majority of anglers never can and never will be "fly-fishers," trolling for Lake Trout is destined to be the prevailing mode of fishing in that county of great waters. Now, I propose to give you a description of the true,

and proper tackle for this branch of angling, which is, by all odds, second only to casting the fly; and a description of which has not, as far as I know, ever been published in any work on angling.

This excellent treatise will be found under the head of Lake Trout Fishing; and herewith, for the present, I quit the Lake Trout.

ABDOMINAL
MALACOPTERYGII. SALMONIDÆ.

THE SALMON TROUT.

SEA TROUT—WHITE TROUT.

Salmo Trutta; Yarrel.

When speaking of this beautiful fish—which, by the aid of my friend Mr. Perley, of the city of St. John, I have been enabled fully to establish for the first time as an unquestionable inhabitant of our waters—I mentioned, on page 277, the singular fact that this fish, although it enters every river and estuary on the eastern side of Nova Scotia, and runs up so far as the meeting of the tidal and fresh waters, does not run up into the shoals, or spawn in the gravel beds of any of those rivers.

While commenting on that fact, I stated that it would appear to indicate a variation in this species from one of the normal habits of the race—that of running up into aërated waters, in order to spawn.

This, it now seems, was founded on an erroneous interpretation of the fact, which is, that the Salmon Trout, which does run up into fresh shallow streams, in order to spawn, on the Eastern Continent, does not breed with us at all on the Atlantic coasts of America, though it will probably be found to do so in the waters which fall into the Pacific, as the Columbia, Sacramento, and other rivers in which, as I learn from returned Californians, it literally swarms

The Salmon Trout in our north-eastern waters is merely a transient and very rapacious visitor, pursuing the vast shoals of smelts which run into all those rivers, and hunting them with unwearied activity and ferocity, until they escape above his reach into the swift and shallow fresh waters, into which he does not seem to pursue them. After their escape, he returns at once into the outer bays and larger estuaries, where he is taken, as I have before described, with the scarlet ibis fly.

The pursuit of the smelt by this fish indicates the propriety of spin-

ning for him with that bait, in the proper localities, in case of his refusing the fly, especially when the smelts are becoming rare.

Mr. Perley, from whom I derive the above valuable information, assures me that he was very successful last spring in taking smelt with a very small scarlet ibis and gold tinsel fly. They rise constantly, he says, leaping quite out of the water at their favorite bait.

I propose to try this sport in the Passaic, in the coming spring; and in default of other fly-fishing, doubt not to find it good fun.

THE SALMON OF THE PACIFIC WATERS.

As these varieties are now falling within the notice of American citizens, and furnishing both food and sport to the bold and hardy pioneers of civilization who are resorting in such numbers to the El Dorado of the Far West, I quote from Richardson's Fauna Boreali Americana the following lively description of their structure, species and habits:

"In the paucity of our information respecting the fish of New Caledonia, the following notices, collected from the Journal of Mr. D. W. Harmon, a partner of the North-West Company, are valuable. This gentleman resided for several years at a fur-post on Stuart's Lake, which lies in the 55th parallel of latitude, and 125th degree of longitude, and which discharges its waters by a stream, named also Stuart, into Frazer's River, that falls into the Strait of Juan da Fuca. As his remarks upon fish relate chiefly to the Salmon tribe, this appears to be the most appropriate place for their insertion.

"'1811. *May* 11.—STUART'S LAKE. The ice in the lake broke up this afternoon. 22. We now take Trout in the lake, with set lines and hooks, in considerable numbers, but they are not of a good kind. It is perhaps a little remarkable, that Pike or Pickerel have never been found in any of the lakes and rivers on the west side of the Rocky Mountains.

"'*August* 2. It is impossible at this season to take fish out of this lake or river. Unless the Salmon from the sea soon make their appearance, our condition will be deplorable. 10. Sent all our people to a small lake about twelve miles off, out of which the natives take small fish, much resembling Salmon in shape and flavor, but not more than six inches long. They are said to be very palatable. 22. One of the natives has caught a Salmon, which is joyful intelligence to us all, for we hope and expect in a few days to have abundance. These

fish visit, to a greater or less extent, all the rivers in this region, and form the principal dependence of the inhabitants as the means of subsistence. The natives always make a feast to express their joy at the arrival of the Salmon. The person who sees the first one in the river exclaims, *Tâ-loe naslay ! tâ-loe naslay !* Salmon have arrived ! Salmon have arrived ! The exclamation is caught up with joy, and repeated with animation by every body in the village.

"'*September* 2. We have now the common Salmon in abundance. They weigh from five to seven pounds. There are also a few of a larger kind, which will weigh sixty or seventy pounds. Both of them are very good when just taken out of the water ; but when dried, as they are by the Indians here by the heat of the sun, or in the smoke of a fire, they are not very palatable. When salted, they are excellent. As soon as the Salmon come into Stuart's Lake, they go in search of the rivers and brooks that fall into it, and these streams they ascend so far as there is water to enable them to swim ; and when they can proceed no farther up, they remain there and die. None were ever seen to descend these streams. They are found dead in such numbers, in some places, as to infect the atmosphere with a terrible stench, for a considerable distance round. But even when they are in a putrid state, the natives frequently gather them up and eat them, apparently with the same relish as if they were fresh.

"'*October* 21. We have now in our store twenty-five thousand Salmon. Four in a day are allowed to each man. I have sent some of our people to take White Fish, Attihawmeg.

"'*November* 16. Our fishermen have returned to the fort, and inform me that they have taken seven thousand White Fish. They weigh from three to four pounds, and were taken in nine nets of sixty fathoms each. 17. The lake froze over in the night.

"'1812. *January* 30. I have returned from visiting five villages of the Nateotains, built on a lake of that name, which gives origin to a river that falls into Gardner's Inlet. They contain about two thousand inhabitants, who subsist principally on Salmon and other small fish, and are all well made and robust. The Salmon of Lake Nateotain have small scales, while those of Stuart's Lake have none.

"'*May* 23.—Stuart's Lake. This morning the natives caught a Sturgeon that would weigh about two hundred and fifty pounds. We

frequently see much larger ones, which we cannot take for want of nets sufficiently strong to hold them.

"'*August* 15. Salmon begin to come up the river. Few Salmon came up Stuart's River this fall, but we procured a sufficient quantity at Frazer's Lake and Stillas. These lakes discharge their waters into Frazer's River, which is about fifty rods wide, and has a pretty strong current. The natives pass the greater part of the summer on a chain of small lakes, where they procure excellent White Fish, Trout, and Carp; but towards the latter part of August they return to the banks of the river, in order to take and dry Salmon for their subsistence during the succeeding winter.

"'1813. *August* 12. Salmon have arrived.

"'1814. *August* 5. Salmon begin to come up the river. They are generally taken in considerable numbers until the latter part of September. For a month they come up in multitudes, and we can take any number we please.

"'*September* 20. We have had but few Salmon this year. It is only every second season that they are numerous, the reason of which I am unable to assign.

"'1815. *August* 13.—Frazer's Lake. Salmon begin to come up the river, which lights up joy in the countenances both of ourselves and of the natives, for we had all become nearly destitute of provisions.

"'1816. *September* 9. Salmon begin to come up this river.

"'1817. *August* 6.—Stuart's Lake. Salmon arrived. In the month of June, we took out of this lake twenty-one Sturgeon, that were from eight to twelve feet in length. One of them measured twelve feet two inches from its extreme points, four feet eleven inches round the middle, and would weigh from five hundred and fifty to six hundred pounds.

"'The Carrier Indians reside a part of the year in villages, built at convenient places for taking and drying Salmon, as they come up the rivers. These fish they take in abundance with little labor; and they constitute their principal food during the whole year. They are not very unpalatable when eaten alone, and with vegetables they are very pleasant food. Towards the middle of April, and sometimes sooner, the natives leave their villages, to go and pass about two months at the small lakes, from which, at that season, they take White Fish,

Trout, Carp, &c., in considerable numbers. But when these begin to fail, they return to their villages and subsist on the small fish which they dried at the lakes, or on Salmon, should they have been so provident as to have kept any until that late season; or they eat herbs, the inner bark or sap of the cypress tree, *(pinus Banksiana,)* berries, &c. At this season, few fish of any kind are to be taken out of the lakes or rivers of New Caledonia. In this manner the natives barely subsist, until about the middle of August, when Salmon again begin to make their appearance in all the rivers of any considerable magnitude; and they have them at most of their villages in plenty until the latter end of September, or the beginning of October. For about a month they come up in crowds, and the noses of some of them are either worn or rotted off, and the eyes of others have perished in their heads; yet in this maimed condition they are surprisingly alert in coming up rapids. These maimed fishes are generally at the head of large bands, on account of which the natives call them *mee-oo-tees*, or chiefs. The Indians say that they have suffered these disasters by falling back among the stones, when coming up difficult places in the rapids which they pass. The Carriers take Salmon in the following manner. All the Indians of the village assist in making a dam across the river, in which they occasionally leave places to insert their baskets or nets of wicker-work. These baskets are generally from fifteen to eighteen feet in length, and from twelve to fifteen feet in circumference. The end at which the Salmon enter is made with twigs in the form of the entrance of a wire mouse-trap. When four or five hundred Salmon have entered this basket, they either take it to the shore to empty out the fish, or they take them out at a door in the top, and transport them to the shore in their large wooden canoes, which are convenient for this purpose. When the Salmon are thrown upon the beach, the women take out their entrails and hang them by the tails on poles in the open air. After they have remained in this situation a day or two, they take them down and cut them thinner, and then leave them to hang for about a month in the open air, when they will have become entirely dry. They are then put into store-houses, which are built on four posts, about ten feet from the ground, to prevent animals from destroying them; and, provided they are preserved dry, they will remain good for several years.'—*Harmon's Travels in North America*, 1820."

THE QUINNAT.

Salmo Quinnat; Cuvier.

"'THIS is the species which ascends the Columbia earliest in the season, commencing its run in the month of May in enormous shoals, clearing the greater Dalles, cascades and rapids innumerable, and making its way to the sources of the river, where, at the close of the season, it is found dead on the beach in great numbers. The muscular power of this fish is truly astonishing, even in a class of the animal kingdom remarkable for vigorous movements, for it may be seen ascending channels at the Kettle Falls so rapid, that when a stone as big as a man's head is dropped into them, it is shot downwards with the swiftness of an arrow.* Individuals of this species have often been seen with their noses fairly worn down to the bone, and in the last stage of emaciation, yet still striving, to the last gasp, to ascend the stream. The selection of particular streams for spawning is a remarkable feature in the history of the fish. It ascends the Walamet, Snake, and Kootanie rivers, &c., and passes by the Kawalitch, Okanagan, Dease's river, and others, seeming to prefer a rapid stream interrupted by falls, to one of a quieter character, though other circumstances must regulate its choice, as some of the rivers which it refuses to enter have an extremely rapid current. It is this Salmon which forms the main subsistence of the numerous hordes of Indians who live upon the banks of the Columbia, and it is known by the name of Quinnat, for one hundred and fifty miles from the mouth of the river. It attains a large size, weighing often from thirty to forty pounds.' The Quinnat is evidently the 'Common Salmon' of Lewis and Clarke. These travellers mention the first arrival of the Salmon at the Skilloot village,

* In the map published by the Society for the Diffusion of Useful Knowledge, the descent at the Kettle Falls is stated at twenty-one feet; but Lewis and Clarke were of opinion that in high floods the water below the falls rises nearly to a level with that above them.

below the site of Fort Vancouver, as having occurred on the 18th of April, in the year 1806.

"'Color.—General tint of the back bluish gray, changing, after a few hours removal from the water, into mountain green; sides ash grey with silvery lustre; belly white; back above the lateral line studded with irregular rhomboidal or star-like black spots, some of them occellated. Dorsal fin and gill-covers slightly reddish; tips of the anal and pectorals blackish gray; the dorsal and caudal thickly studded with round and rhomboidal spots, back of the head sparingly marked with the same. Whole body below the lateral line, with the under fins, destitute of spots. Lower jaw and tongue blackish gray; roof of the mouth tinged here and there with the same. Scales large. Teeth disappearing on the medial line of the upper jaw, one row on each palate bone, a few small teeth on the fore part of the vomer, and two rows on the tongue. Form.—The greatest convexity of the back at the origin of the dorsal; end of the caudal semilunar; adipose opposite to the posterior end of the anal; dorsal of greater height than length. Fins.—Br. 17; P. 16; V. 10; A. 16; D. 14—0; C. $19\frac{6}{6}$.'

"The specimen of this Salmon, though it is very soft, and has lost its scales, still retains its form, so that I am able to add the following particulars to Dr. Gairdner's description:—General form much like that of a Salmon Trout. The head is exactly one-fourth of the length, from the tip of the snout to the end of the scales on the caudal. The snout is cartilaginous as in *S. Salar*, and the length of the lower jaw rather exceeds that of the upper surface of the head. The edge of the gill-plate is an arc of a circle as in that species, but the suboperculum is still more sloped off, having much the form of that of *Salmo Scouleri*. There are sixteen gill-rays on the right side, and seventeen on the left. The largest teeth are those of the under jaw, of which there are eleven in each limb, placed at regular distances, with some small ones in the intervals attached to the soft parts only. The labial and intermaxillary teeth are similar to these, and but little inferior in size. The lingual teeth, considerably smaller than those in the jaw, are placed in two parallel rows, five in each. The palatine teeth are a little shorter than the lingual ones, and those on the vomer are the smallest of all, scarcely protruding through the soft parts in the recent specimen; there are nine of them—two in front, the others

in a single series, running upwards of half an inch backwards, or about two-thirds as far back as the palatine teeth. The gullet is armed with small teeth above and below. The jaw teeth are as big as those of the Salmon Trout. There are sixty-six vertebræ in the spine. The pyloric *cæca* are very numerous, there being about one hundred and fifty-five of them; and their insertions surround the intestines from the pylorus until it makes a bend downwards, below which they continue to be inserted for a short way on one side of the gut only."

GAIRDNER'S SALMON.

THE QUEACHTS.

Salmo Gairdnerii; Richardson.

"The specific name which I have given to this Salmon is intended as a tribute to the merits of a young though able naturalist, from whom science may expect many important acquisitions, and especially in the history of the Zoology of the north-west coast of America, should his engagements with the Hudson's Bay Company permit him to cultivate that hitherto neglected field of observation.

"'This species ascends the river in the month of June, in much smaller numbers than the Quinnat, in whose company it is taken. Its average weight is between six and seven pounds.

"'Color.—Back of head and body bluish gray; sides ash gray. Belly white. The only traces of variegated marking are a few faint spots at the root of the caudal. Form.—Profile of dorsal line nearly straight, tail terminating in a highly semilunar outline. Ventrals correspond to commencement of dorsal and adipose to end of anal. Teeth.—Jaws fully armed with strong hooked teeth, except a small space in centre of upper jaw. Vomer armed with a double row for two-thirds of its anterior portion. Palate bones also armed with strong teeth. Fins.—Br. 11—12; P. 13; V. 11; A. 12.'

"In this species the gill-cover resembles that of *Salmo Salar* still more strongly than that of the Quinnat does, the shape of the sub-operculum in particular being precisely the same with that of *Salar*. The teeth stand in bony sockets like those of the Quinnat, but are scarcely so long. Those of the lower jaw and intermaxillaries are a little smaller than the lingual ones, and somewhat larger than the palatine or labial ones. The tongue contains six teeth on each side, the rows not parallel as in the Quinnat, but diverging a little posteriorly. The pharyngeals are armed with small sharp teeth. The numbers of

the teeth, excluding the small ones which fall off with the gums, are as follow:—Intermax. 4—4; labials 21—21; lower jaw 11—11; palate bones 12—12; vomer lost; tongue 6—6. When the soft parts are entirely removed, the projecting under edge of the articular piece of the lower jaw is acutely serrated, in which respect this species differs from all the others received from Dr. Gairdner. There are sixty-four vertebræ in the spine."

WEAK-TOOTHED SALMON.

QUANNICH.

Salmo Paucidens; Richardson.

"This Salmon ascends the Columbia at the same time with the *S. Gairdnerii*, and in equal numbers. It is taken in company with that species and the Quinnat, and has an average weight of three or four pounds.

"'Color.—Back of head and body bluish gray; sides ash gray with a reddish tinge; belly white. No trace of spots on the body or fins. Form.—Commissure of the mouth very oblique, approaching to vertical, dorsal profile quite straight, tail forked. Ventrals corresponding to middle of the dorsal, and adipose to posterior extremity of the anal. Teeth sparingly scattered and feeble on the jaws, only a few short weak ones on the anterior extremity of the vomer, and on the palate bones. Fins.—Br. 13; P. 17; V. 12; A. 17; D. 12—0.'

"From the labels having dropped off, I cannot refer the fragments of any of the specimens to this species with certainty; but I am inclined to think that the spine, containing sixty-six vertebræ, belongs to it, and if so, the gill-cover is extremely like that of *S. Scouleri*, and the bones of the head have the same fibrous structure which we have noticed in the description of that species. None of the teeth have been preserved, but those of the lower jaw appear to have been fixed in cartilaginous sockets, which have separated from the bone, leaving a rough surface. The palate and upper jaw bones are lost. The union of the branchial arches at the root of the tongue is longer and narrower than in the preceding two species, and the gill-openings consequently are more ample. Either this species or the *S. Scouleri*, or perhaps both, are named 'Red Char' by Lewis and Clarke."

THE EKEWAN.

Salmo Scouleri; Richardson.

"'The Ekewan, which averages thirty pounds in weight, ascends the Columbia towards the end of August and in the month of September. Its flesh is paler and of inferior quality to the four preceding kinds.' From Dr. Gairdner's description of this species, I have little doubt of its being the same with the *S. Scouleri* of Observatory Inlet; and I should, without hesitation, have referred to it the spinal column and opercular bones noticed at the close of the account of the preceding species, had not Dr. Gairdner mentioned that no specimen of the Ekewan was sent, as he had not obtained one small enough to be put in spirits.

"'Color.—Body above medial line smoke gray, passing on head and tail into bluish gray; a slight reddish tinge at the root of the dorsal, and between it and the adipose. Fins bluish gray, and all tinged with red except the caudal, which, with the back, is studded with irregular semilunar and stellated blackish brown spots. A large vermillion red patch in the concavity of the vertex, and another on the preopercule. Body below the mesial line grayish white with a reddish tinge. Form. —A remarkable flattening over extremity of snout, behind which a slight concavity to occiput, where the body rises suddenly into a hump, and continues rising as far as the first dorsal, this elevated portion being accuminated into a ridge. A notch behind the point of the snout gives an arched outline to the commissure of the mouth. Lower jaw also arched upwards, so that the two jaws do not approach each other when the mouth is closed, except at the two extremities. Teeth. —Jaws fully armed with strong hooked teeth, except a small space in the medial line of the upper jaw. Teeth moveable, from being imbedded in soft cartilaginous sockets. Two rows of strong lingual teeth, a single row on each palate bone, and a few rudimentary ones can be felt in a single row on the anterior extremity of the vomer. Teeth on

the pharyngeal bones. Rays.—Br. 16; P. 16; V. 9; A. 16; D. 12—0.

"'This description applies to a female—the male differs in the upper jaw being elongated into a proboscis, which projects beyond the lower jaw when the mouth is closed; it is formed of a moveable cartilaginous mass articulated to the extremity of the nasal bones, and is furnished with teeth as well as the rest of the jaw. The lower jaw is narrower, and entirely received within the concavity of the upper one when the mouth is shut.'"

THE TSUPPITCH.

Salmo Tsuppitch; ———.

"'THE Tsuppitch ascends the Columbia at the same time with the Ekewan. I counted 1644 ova in the ovary of a female.

"'COLOR.—Back of body and head studded with oval and circular spots; sides and fins, including the caudal, destitute of spots; back medially bluish gray, passing on the back of the head into blackish gray, and on the sides into yellowish gray, with a greenish tinge and silvery white. General color of the fins ash gray. TEETH.—Jaws fully armed with minute sharp teeth, a single row on each palate bone, a very few on the anterior end of the vomer in a single series, and a double row on the tongue. FORM.—Head small, exactly conical, terminating in a pointed snout. Commissure of mouth very slightly oblique. Convexity of dorsal profile rising gradually to origin of first dorsal, and declining from thence to the tail. Caudal forked. RAYS —Br. 13; P. 13; V. 10; A. 13; D. 12—0.'

"A spine containing sixty-four vertebræ, and an under jaw with ten curved teeth in each limb, are all the bones that I can with any appearance of correctness refer to this species. The teeth are of equal size with those of *S. Gairdneri*, or perhaps rather larger, and are attached to the jaw-bone through the medium of cartilage.

CLARKE'S SALMON.

Salmo Clarkii; Richardson.

"Dr. Gairdner does not mention the Indian name of this Trout, which was caught in the Katpootl, a small tributary of the Columbia, on its right bank. I have therefore named it as a tribute to the memory of Captain Clarke, who notices it in the narrative prepared by him of the proceedings of the Expedition to the Pacific, of which he and Captain Lewis had a joint command, as a dark variety of Salmon Trout. In color this species resembles the Mykiss of Kamtschatka, and there is no very material discrepancy in the number of rays in the fins. Vide Arct. Zool., Intr., p. cxxvi.

"'COLOR.—Back generally brownish purple red, passing on the sides into ash gray, and into reddish white on the belly. Large patches of dark purplish red on the back. Dorsals and base of the caudal ash gray, end of caudal pansy purple. Back, dorsal, and caudal studded with small semilunar spots. A large patch of arterial red on the opercule and margin of the preopercule. Pectorals, ventrals, and anal grayish white, tinged with rose red. TEETH.—Both jaws armed with strong hooked teeth, a single row on each palate bone, a double row on the anterior half of the vomer and on the tongue. Dorsal profile nearly straight. Ventrals opposite to the middle of the first dorsal. Fissure of mouth oblique. Extremity of caudal nearly even. FINS. Br. 11; P. 12; V. 8; A. 13; D. 11—0.'

"There appear to have been two specimens of this species sent to me by Dr. Gairdner. In both the spinal column contains sixty-two vertebræ. The teeth, which are closely set, rather long, slender and acute; and, in the older specimen, considerably curved, are in number as follows:—Intermax. lost; labials 28—30; palate bones 15—17; vomer 13, two in front and the others in a single flexuose series, as long as the dental surface of the palate-bones: lower jaw 13—13; tongue 6—6, in two almost parallel rows The lingual teeth are the

largest and most curved, those of the lower jaw are next in size, then follow the vomerine, palatine, and labial teeth, which are equal to each other. The pharyngeal teeth are also proportionally long, and there is an oblong palate, rough with very minute ones, on the isthmus which unites the lower ends of the branchial arches. This space is quite smooth in *S. Salar*, in several, if not in all the English Trouts, and in *S. Quinnat*, *Gairdneri*, and in the imperfect specimen which I have referred to *S. Scouleri*. In the latter the surface of the arches is also quite smooth, but in the Quinnat and Gairdneri minute rough points become visible with a good eye-glass. In all the Trouts the compressed rakers have their thin inner edges more or less strongly toothed. In one of the specimens of *S. Clarkii* the spinal column is nine inches long, in the other six."

THE NORTH-WEST CAPELIN.

Salmo (*Mallotus?*) *Pacificus;* Richardson.—Sub-genus *Mallotus;* Cuvier?

"'The Indian name of this fish is *Oulachan.* It comes annually in immense shoals into the Columbia, about the 23rd of February, but ascends no higher than the Katpootl, a tributary which joins it about sixty miles from its mouth. It keeps close to the bottom of the stream in the day, and is caught only in the night. The instrument used in its capture by the natives is a long stick armed with sharp points, which is plunged into the midst of the shoal, and several are generally transfixed by each stroke. It is the favorite food of the Sturgeon, which enters the river at the same time, and never has a better flavor than when it preys on this fish. The *Oulachan* spawns in the different small streams which fall into the lower part of the Columbia. It is much prized as an article of food by the natives, and arrives opportunely in the interval between the expenditure of their winter stock of dry Salmon and the first appearance of the Quinnat in May.' This fish is noticed by Lewis and Clarke in the following terms:—'The Anchovy, which the natives call *Olthen*, is so delicate a fish that it soon becomes tainted, unless pickled or smoked; the natives run a small stick through the gills, and hang it to dry in the smoke of their lodges, or kindle small fires under it; it needs no previous preparation of gutting, and will be cured in twenty-four hours; the natives do not appear to be very scrupulous about eating it when a little fœtid.'

"'Color generally silvery white, passing on the back into a blackish tinge. Large irregular, but generally oval spots of yellowish white and blackish gray on the back. A bluish black spot over each orbit. Margins of lips black. Back of head grayish white. Minute black dots on the silvery basis of the cheeks. Form.—Head small and pointed. Large suborbital covering the greater part of the cheek. Opercule terminating in a thin rounded angle. Mouth opening obliquely upwards, its fissure extending as far back as the anterior margin of the

orbit. Lower jaw projecting beyond the upper one, and terminating in a rounded knob turned slightly upwards. Margins of upper jaw entirely formed by the intermaxillaries, on which there are a few minute setæ in place of teeth. Lower jaw, vomer and palatines devoid of teeth. Tongue rough, and pharyngeals armed with teeth. Fins. —Br. 8; P. 11; V. 8; D. 11—0; A. 20. Adipose fin thin and containing little fat. Lateral line straight and continuous.'

"Five specimens were sent to me by Dr. Gairdner, but they were unfortunately all so much injured that I can add very few particulars to that gentleman's brief description. In the general form, the appearance of the scales, the black specks on the head and body, the form of the anal and its attachment to a compressed projecting edge of the tail, the structure of the lower jaw and gill-covers, and in the shape of the head as far as it could be ascertained, this fish closely resembles the Capelin. On the other hand, the ascent of the species into fresh water to spawn, and perhaps its dentition, ally it to the Smelt. Head as in the Capelin, forming one-fifth of the length between the tip of the snout and end of the central caudal rays. Caudal forked. Dorsal commencing a very little anterior to the middle between the tip of the snout and end of scales on the caudal, agreeing, in this respect, more nearly with the Smelt than with the Capelin, in which the dorsal is farther back, its first ray being equidistant from the end of the snout and the extremity of the central caudal ray. Anal of one specimen containing twenty-one rays. Gill-covers thin, papery, and flexible, lined with nacre. In drying, the surfaces of the opercular bones are marked with wrinkles parallel to their sides, as may be observed in the Smelt and Capelin, but not so conspicuously. These wrinkles are most evident on the square operculum. As the thin lining of the mouth and lips is mostly abraded, from the putrescency of the specimens, the dentition can be only imperfectly ascertained from them. In four specimens no teeth whatever can be discovered; but in a fifth, a female full of mature roe, the lower jaw is armed with a single series of very slender, curved teeth, rather more distant, and longer than those of the Capelin. There is also a solitary tooth remaining on the vomer of the same specimen, occupying the place of the exterior vomerine tooth in the Smelt, and nearly as large. Tongue conical as in the Smelt, and not presenting an oval flat surface sur-

rounded with teeth like the Capelin. In all the specimens the upper jaw was so much injured that its structure could not be ascertained; but it is probable that the intermaxillaries, being small as in the Capelin, were not distinguished from the labials by Dr. Gairdner, in his examination of the recent fish. The rakers of the branchiæ are long and slender as in the Smelts and Capelin. The stomach resembles that of the Capelin; the descending portion ends in a pointed sac, and a short branch which it gives off in the middle terminates in the pylorus. The intestine makes a bend, or rather twist, downwards at the pylorus, and runs straight to the anus, its calibre gradually becoming less as it approaches the latter. There are nine cæca, three of them rather shorter than the others, close to the pylorus; the other six, inserted in a single series down one side of the intestine, are each half an inch long. In three specimens there are sixty-eight vertebræ in the spine, and in two sixty-nine. A male specimen, with the melt half-grown, showed no traces of *villi*, or altered scales, on the lateral line, though the skin was apparently entire in that place. Male Capelins, destitute of the ridges of elongated scales, are occasionally taken in Greenland."

THE WHITE FISH.

ATTEHAWMEG.

Coregonus Albus.

It is very worthy of remark, that this delicious fish is taken abundantly, and of the very finest quality, infinitely superior to the fish of Lakes Erie and Ontario, and not inferior to that of Huron and Superior in the small inland lakes of Seneca and Cayuga.

So far as I can learn, the White Fish is nowhere taken with the fly, unless by pure accident; and that it is utterly unworthy of the angler's pursuit, as a fish of game, cannot be doubted. The *Coregoni*, in general, are the most vegetable-eating of all the *Salmonidæ*, and rarely take a bait of any kind, although I learn that in Seneca Lake they are occasionally caught on set lines, especially with stale bait.

I find it stated in Dr. Richardson's Fauna Boreali Americana, that the White Fish runs up the Severn River from Lake Huron, in order to spawn, on the authority of Dr. Todd; there must, however, be some error in this; as having visited the Severn this autumn, and canoed up it into Lake Simcoe, I can answer for the fact that it is impracticable to any fish; and that having a purely rocky bottom until above the great falls, it possesses no spawning grounds to tempt fish. At the very outlet there is a natural fall or rapid of above twelve feet, with an old Indian mill-dam; at about twelve miles higher yet, there is a very powerful rapid of about fifteen, and at twenty-five from the mouth a superb rapid and fall of seventy feet descent in about a hundred yards of length.

The Severn notoriously contains no fish except a few sucking Carp of different kinds, a few Rock Bass, and in the shallow rice lakes above the falls, goodly Mascalonge.

The best White Fish are taken in the rapids of the Sault St. Marie, with scoop-nets; but they are also speared by the Indians, and taken in vast quantities with the seine, by the white settlers.

LE SUEUR'S HERRING SALMON.

Coregonus Artedi; Le Sueur.

This fish is the Herring of Lake Erie and the Niagara River. It is not of much value as an article of food, and of next to none as a fish of sport. The meat is white and delicate enough, but rather dry and tasteless.

Richardson thus alludes to it in his fine work, so often quoted, on the Northern fishes of America:

"This species having been taken in Lake Erie and the Niagara River, requires to be noticed in this work. M. Le Sueur says that it is locally known by the name of Herring Salmon, and is considered to be very delicate food. As it did not fall under our notice, we shall transcribe the description given of it by its discoverer.

"*Description quoted from M. Le Sueur.*—Body subfusiform, a little elevated at the back; head small, having an osseous radiated plate which is covered by the skin; snout pointed. In form this species approaches the *Scombri;* a section of it is oval. Head small and narrow; snout short, terminated by small intermaxillaries; maxillaries wide, sharp-edged as in the Herring, edges entire; mandibles carinate, producing inwardly a triangular pedunculate expansion; very small conical teeth inserted in the skin of the lips at the extremity of the jaws: these teeth were sufficiently manifest in a small individual, but not visible in a larger one, a female, which came under my observation. Rays in the osseous plate of the head tubular, and open at the exterior, some tending backwards, and others towards the end of the snout. A faint carinate line divides the top of the head in the dried specimen. Lateral line straight and near the middle; nostrils double, close to the end of the snout and articulation of the maxillaries; scales round, approximated, easily falling off; the base of the tail is covered with them. Color ash blue at the back, paler and silvery on the rest of the body, with yellow tints on the tail, head and dorsal; iris whitish,

pupil black. Length ten to twelve inches. FINS.—Br. 9; P. 16; D. 12—0; V. 12; A. 13; C.—$\frac{6}{6}$.

"M. Le Sueur, in comparing our Attihawmeg, or his *Coregonus Albus*, with *C. Artedi*, says that it has a less fusiform body, and the back elevated from the nape to the dorsal. 'The *C. Albus*,' he further states, 'has more depth of body, a greater elevation of back, and much stronger proportions in its body, fins, and scales. The adipose fin, which is broad, appears to consist of delicate rays, much pressed, and in pairs.' A careful examination of the dried specimens of our *C. Albus* from Lake Huron, exhibited no rays whatever, nor any interspinous bones to support them, but the fin, in drying, splits in a fibrous manner."

This is the Herring of Seneca Lake, now becoming very rare, but much prized, as the best and most killing of all baits upon the deep lake set-line for Trout, Pike-Perch, Eels, and Black Bass.

LAKE HURON HERRING SALMON.

THE HERRING.

Coregonus Harengus; Richardson.

This fish is exceedingly abundant on the shores of Lake Huron, to which it resorts in enormous shoals in the spring and autumn, and constitutes a principal article of food to the Indians and white settlers. It is rather a dry and tasteless fish. It occasionally rises at the fly, but is rarely taken except by the seine.

Richardson describes him thus. I have examined this and the last species, and am satisfied that they are distinct:

"This fish is plentiful at Penetanguishene, on Lake Huron; but I am unable to determine whether it be the same with the *C. Artedi* of Le Sueur, which we have already noticed as an inhabitant of Lake Erie. Baron Cuvier's remark upon our specimen was, '*Espèce nouvelle voisine des Coregones.*' It resembles *C. Lucidus* very nearly; its larger head, smaller scales, and a slight difference in the position of its ventrals being the principal distinctive characters I have been able to detect in the dried specimens. Having lost my notes of the dissections which I made of *C. Lucidus*, and having examined the recent specimens of *C. Harengus* only cursorily, I can say nothing respecting any differences that may exist in their viscera. An argument against the identity of the species may be adduced from their habitats being upwards of twenty degrees of latitude apart.

"The Lake Huron Herring Salmon is gregarious, like the Bear Lake one, and frequents sandy bays during the summer months. It spawns in April and May, and at that time is occasionally seen in rivers. According to Mr. Todd's observations, it is 'a timid fish, appears to be in constant rapid motion, and associates in shoals in pursuit of the fry of the small fishes on which it feeds. As an article of diet, it is well tasted and wholesome, though much less rich and agreeable than the Attihawmeg.

"The following is a description drawn up from notes made at Penetanguishene, aided by a re-examination of the dried specimens:

"Color, in the recent fish, olive green on the back, silvery on the sides and belly, and blackish green on the top of the head; the gill-covers, cheeks, and irides are whitish and nacry.

"Scales of the same form with those *C. Lucidus*, but only of two-thirds the size; on the sides their transverse diameter is four lines, their longitudinal one rather more than three, and when *in situ*, eight are included within a linear inch. There are eighty-four on the lateral line,* and twenty-two in a vertical row under the dorsal, of which nine are above the lateral line, and eight between it and the ventrals. The lateral line is straight.

"Form.—Body compressed, back rounded, belly slightly flattened, the greatest thickness, however, being at the lateral line, which is rather nearer to the back than to the belly; the height of the body, at the dorsal, is double its thickness. Profile like that of *C. Lucidus*, the head being, however, more acute.† The snout is obtuse, when seen in front or from above, and the vertex is smooth and rounded in the recent fish; in the dried specimen the radiated tubular lines near the nape, the sagittal ridge and other eminences, appear as in *C. Lucidus*, but not so prominently. The length of the head is more than one-fourth of the distance between the tip of the snout and end of the scales on the caudal, and somewhat less than one-fifth of the total length, including the lobes of the caudal. In the position of the eye, and the forms of the jaws and opercular bones, this species scarcely differs from *C. Lucidus*. When the mouth is fully open, its orifice measures seven lines vertically, and five and a half transversely; the under jaw, which is narrow, but not acute, then projects about four lines beyond the articulations of the labials.

"Teeth, none on the jaws, vomer, or palate, but three rows of very slender ones on the tongue may be perceived by the aid of a lens. Rakers stiff, subulate, and rough on the margins, the middle ones of the first arch, which are the largest, measuring five lines.

* One specimen had only seventy-seven scales on the lateral line, but the same as the above in a vertical row.

† The figure, which was taken from a dried specimen, presents a less elegant profile than that of the recent fish.

"FINS.—Br. 9—9; D. 12 or 13—0; P. 16; V. 12; A. 13; C. $19\frac{2}{9}$.

"The ventrals originate under the sixth or seventh dorsal ray, but the structure and form of all the fins are nearly as in *C. Lucidus*. The adipose is not supported by interspinous bones, but it exhibits in the dried specimen a very fine, apparently fibrous structure, which entirely disappears when the fin is moistened. In one specimen the centre between the tip of the snout and end of scales on the caudal, corresponds with the first ray of the ventrals and thirtieth scale of the lateral line; in another it is a little posterior to the first ventral ray, being at the thirty-third scale of the lateral line: in the last specimen the lateral line has seven scales more than the other."

THE PIKE PEARCH.

YELLOW PIKE PERCH, OR AMERICAN SANDRE.

Lucioperca Americana; DeKay.

In speaking of this fish in the body of this work, not having then seen it, I borrowed both the description and the cut from Dr. DeKay's Fauna of New York.

The cut, I regret to say, is very incorrect, especially as regards the position of the ventral fins, which, as in the *subbrachial Malacopterygii* and the Bass group of the *Percidæ*, are attached to the humeral bones, and situate immediately below the pectorals.

The following is the description, with measurement, of very fine specimens, sent to me by Mr. Mandeville, of Geneva:

Head prolonged, snout-like, with a flattened depression above the eyes. Preoperculum nearly vertical, scalloped rather than dentated on the under margin. The operculum has three flat angular processes, corresponding to a line drawn from the snout through the centre of the orbit, and a pointed membrane beyond.

Eye very large, nearly equidistant between the snout and the opercle.

Dental system most formidable; several powerful recurved canine tusks at the extremity of each jaw, those of the lower received into corresponding cavities of the upper jaw; a series of smaller hooked teeth on the labials, and a row of very long sharp recurved tusks on the palatines; no teeth on the tongue or vomer.

Whole length, 19 inches; from snout to posterior angle of opercle, 5 inches; from snout to centre of eye, $1\frac{7}{8}$ inch; to origin of the pectorals, $4\frac{6}{8}$ inches; of ventrals, $5\frac{2}{8}$; of anal, $11\frac{1}{2}$; of caudal, $16\frac{1}{2}$; of first dorsal, 5; of second dorsal, $10\frac{1}{2}$. Breadth, $5\frac{1}{2}$ inches; thickness, $2\frac{1}{2}$.

Branchiostegous rays, 6.

Pectorals thirteen soft rays; ventrals one spine five branched rays; anal one spine twelve branched rays; caudal deeply furcate, nineteen

rays; first dorsal, fifteen spines, first three short, fourth and fifth longest; second dorsal, two short spines, seventeen soft rays. The ventrals are placed, as in the *subbrachial Malacopterygii*, immediately below, and a little behind the pectorals.

The dorsal outline is slightly curved, and descending abruptly to the snout, above the operculum; the lateral line is nearly concurrent with the dorsal outline; ventral outline much curved.

The pectoral fins are golden yellow; the ventrals and anal, ruddy orange; dorsals, transparent yellowish green, mottled with blackish gray. Head, blackish brown above. Gill-covers, golden yellow, mottled with purplish gray. Back, above the lateral line, purplish brown, with a golden spot on the edge of every scale, giving it a beautiful dappled hue. The sides down to the pectorals, and in a line thence to the anal, beautifully mottled with vivid golden yellow and purplish brown, running in irregular wavy diagonal lines, upward and backward. Belly pure white.

This is a beautiful fish, and as good and game as he is beautiful.

In Seneca Lake these fish will rarely take the bait in trolling or spinning; but in Cayuga they are constantly so taken with Shiners, or by trolling with two hooks about two and a half inches apart, baited with a frog, one hook through the lip, the other through the thigh, which, as the frog is drawn along, gives it a natural swimming motion.

The Pike Perch fights hard and pulls very strongly. The same tackle as for Pickerel is the best.

His flesh is delicate and delicious; boiled, he is best with parsley and butter or egg sauce; but in no way is he other than a good table

SOUTHERN SEA FISHES.

It is a source of much regret and disappointment to me that a number of specimens, which I was promised from Charleston, have not come to hand in season for this edition; I relied on them wherefrom to draw figures and compile descriptions of several, to me, new *genera*, which I can now only name by their provincial appellations, which, being incorrect and local, are not to be found in the books.

The principal of these are the Cavalle, and Horse Cavalle, two fish of the *Percoid* family, strongly spined, which are said to be bold biters, and the former a very fine fish. Besides these, there is the Southern Black Fish, entirely different from the Tautog, or Northern Black Fish, and having a much larger mouth; several varieties of Mullet, and the far-famed Pompano of Florida, a fish of the Mackarel family.

Of late years, the Tautog and Boston Bay Whiting have been introduced into the Bay of Charleston, and are said to be greatly thriving and becoming abundant.

None of these fish, as I am informed by my friend Mr. King, of Charleston, South Carolina, the keenest fisherman of those waters, are ever taken except with the hand-line, with a heavy sinker and clam bait, the rod and reel being ignored and voted useless by the anglers in the deep-sea line.

I trust, at some future period, to procure more and authentic information touching these fishes; but in lack of certain and positive information, I prefer silence to either theory or error.

PART II.

THE

FISHING

OF

North America.

SALMON FISHING.

On reconsidering what I have written in the body of the work, I perceive that I have written somewhat too rapidly, taking matters for granted which are granted with a finished angler, and therefore passing them over without comment, where, perhaps, they need to a novice farther explanation.

I shall therefore recapitulate, first, the implements, and then the *modus operandi*.

THE SALMON-ROD AND TACKLE.

My description of the Salmon-rod, on page 240, is nearly unobjectionable, so far as it goes. Experience makes the angler dread whalebone; I think that it should never be used in any rod, particularly on the tip of the top joint of a Salmon-rod; it will curve, and by pressure cease to be elastic, or spring. I have seen the worst effects from its use. The stationary curve or bend of the extreme end of the tip will, despite of every precaution, cause the line to coil round the top, and then, "where are you?" reel useless—tackle gone—fish gone! Anything but whalebone. Split bamboo, spliced, is preferable to any other wood. Lance-wood is good—very good. All modern Salmon-rods are made with ferrules and cappings, each of which is received into a socket of metal, brass, or German silver, let into the receiving-joint. This is all very neat and convenient; but I never would think of throwing a fly for a Salmon, with a rod of this character, without loop-ties, as security against the joints loosening or flying apart.

The continued use and action of a powerful eighteen-feet rod, when subjected to the constant tug and work of a Salmon, will loosen them, I care not how well made, or how closely fitted; and even with the loop-ties, I have known the very best to shake, and make one also shake.

Screwed joints are, I think, not lasting; they very soon get worn and shaky, and make a man timid; for in Salmon fishing, one should have the most unbounded confidence in his tackle. I cannot overcome my respect and reverence for the old-fashioned spliced rod; with it one has elasticity, firmness, and strength, combined with lightness. A modern eighteen-feet rod must weigh at least two pounds twelve ounces. The spliced rod, same length, will not weigh more than two pounds two ounces; and ten ounces additional weight is no joke in a day's cast.

Every Salmon-rod should be provided with a spike to screw into the butt; it is all-important for many purposes, and every Salmon-fisher knows the use of it. The great fault in most Salmon rods is the imperfect and ignorant "ringing." The modern rods have too few and too small rings; too many are better than too few, particularly on the top joint. The very best rods now have sixteen rings.

One hundred yards of line is abundant for the heaviest Salmon; and I believe that no Salmon was ever lost owing to shortness of line, with one of this length on the reel. Every experienced angler for Salmon knows that a Salmon is, unlike the Bass, not a "run-away" fish. His run seldom exceeds fifteen or twenty yards, and even then, like a trotting horse, he requires a tight rein to make him "go." In Salmon-fishing it answers very well where you have eighty or a hundred yards of line on the reel, to have the taper gradual from the fortieth or fiftieth yard, the centre of the line, to the reel end, and from the centre to the fly end; and thus, when necessity requires it, the reel end can be changed to the fly end, and the *old* fly end made the reel end. I have killed my share of Salmon, and I never had a fish take seventy-five yards from me, even in a large lake, where they had plenty of "sea-room."

A friend of mine struck a very heavy fish on Loch Corrib, in the County Galway, in Ireland. The water was very rough, and he was standing on a projecting rock which ran out of a small island, opposite to the beautiful village of Ouchterard. He had light tackle, and not more than seventy yards of line on his reel. He killed the fish after about one hour's work; and that fish did not run off fifty yards of his line. His weight was eleven pounds, much lighter than the angler expected when he first struck him.

The use of two or more flies, when fishing for Salmon in a river, would be an experiment, I think, dangerous in the extreme ; and even in lakes I have never seen any man use even two flies, when fishing with the rod.

A true Salmon fisher should disdain and spurn the use of double gut. A friend, instructed by the best fisherman during his day, states that he never shall forget his direction, viz:—"Let your tackle be of the lightest kind, consistent with strength." *He* never used double gut. I never have, and never will. The link on which the fly is tied should be finer and more slender than the link to which it is looped or knotted. The end of the casting-line, which is united to the reel-line, should be the thickest and strongest portion of the gut, and the whole should taper to the fly. Three yards and a half is the proper length from fly to reel-line. This instruction is all-important, as I hope to show, when speaking of Trout.

THE CASTING-LINE.

The casting-line should be looped, for Salmon fishing, to the reel-line. The loops on both should be securely whipped with strong and well-waxed silk. The casting-line, without the addition of the fly links, should be three yards, and no more; and every knot on the casting-line should be the *water-knot*, which is the simplest knot in the world, being the common tie-knot, with two or three turns round itself instead of one. For Salmon fishing three knots are necessary. though two are sufficient for Trout.

Each knot should be well secured by whipping with waxed silk ; and at the end of the line a link should be made, and well secured as above.

The link upon which the fly is tied, should be knotted with the water-knot, as described, to another link, upon which a loop should be made, also well secured by whipping.

Thus, then, we have two links upon which the fly is tied. The loop then upon the fly-link is looped to the casting-line, and thus the casting-line is about three yards and a half in length from reel-line to fly. By this mode, the disadvantage arising from the double loop on the casting-line is partly obviated by having the loop removed a considerable distance from the fly.

This is my Salmon casting-line, and experience and close observation enables me to say, with confidence, that it is the proper one.

On page 244, I have stated that "the mode is identical," that is, of casting the fly for the Trout and the Salmon. What I intended here to say is simply, that the effect to be aimed at is the same; the mode of operation is certainly in some sort different. The wielding of an eighteen-feet Salmon-rod, as done with both hands, certainly differs from the handling with one hand of the light twelve-feet rod.

The former requires more power, slowness and steadiness of arm; and far more caution is needed to prevent the fly from cracking off.

It is the most difficult thing in the world to describe motions of the arm, so as to be distinctly understood; much more, motions of an implement so delicate as a fly-rod.

With regard to the mode of casting or delivering the fly, I have nothing to add to the instructions given on page 246 of the body of the work. I will, however, add, that in playing a heavy fish, hooked on a single gut, it is very well, "beside advancing the butt, and bearing your rod backward over your right shoulder," to lower the body by bending the knees as much as possible, or even kneeling down, as by so doing you diminish and equalise the strain on that most delicate of instruments, the long Salmon-rod.

It is to be observed that a moment longer may be given to a Salmon, before striking, than to a Trout; many good writers recommend allowing him to turn before striking, but with this I do not coincide.

My own idea is like shooting on the first aim—always to strike, and to kill, with judgment, as quickly as you can; never giving a moment of time, or an inch of line, which you can avoid giving.

On the subject of flies, it is not necessary to say more. All large and gaudy flies, on Limerick hooks, will kill in some state or other of some waters; and with a pretty good assortment, the angler has only got to change till he finds one to which the fish will rise, and then stick to that.

And so, adieu to Salmon Fishing.

TROUT-FISHING.

THE IMPLEMENTS.

With regard to the rod, as described on page 254, I have little or no more to say.

Different persons approve of different degrees of pliancy in rods, Irish anglers generally using one much more pliant than their English brethren.

My correspondent referred to above, writes to me in reference to my description, thus: and his theory and practice are both so good, that I cannot do better than again quote him, as I agree fully with every word.

THE TROUT-ROD.

"A pliant Trout-rod, in the hand of a fly-fisher, is a comfort. Persons who use spliced rods can handle a very pliant one, but the great majority of anglers, as you are aware, use the jointed rods; and it is almost impossible for 'an old hand,' who has for years used a spliced rod, to procure one sufficiently pliant.

A rod can, however, be too pliant, even in the hand of the most experienced. Every man who has used a very pliant rod, knows that when preparing for a fresh cast, the line will catch before it can be carried sufficiently back to make the forward movement; and the effect is, that in the effort to obviate the threatened difficulty, a fly will crack off. Now, I use a very pliant rod; but I am an Irishman, and learned my trade in that land of lake and river. You are an Englishman, and I suppose became master of your trade there. The English use comparatively stiff rods. A rod should not be pliant below the second joint. It is no easy matter to describe one. Your length, twelve

feet, is exactly up to my notion. The weight should not exceed thirteen or fourteen ounces; and above all, it should not be top-heavy. In stormy weather, a very pliant rod, even in the hands of the best angler, is very inconvenient and laborious; and when used in such weather, nothing short of constant care and exertion will save the flies from snapping off.

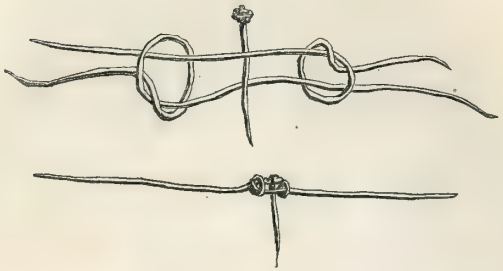
"You omit to mention the necessity for a spike in the butt. Every fly-rod should have it. In case a new cast of flies is required, or any change, what a convenience to have the rod erect, and the line hanging down to your hand. How many rods get broken when stretched on the ground, by some careless devil standing on the tip; or the tip being obstructed by weed or brier, in a sudden and careless lift.

"You give no directions about the number of rings. A rod should have sixteen. Avoid whalebone tip. There should be no perceptible spring in a fly-rod before three and a half feet from the spike; a spring below that will inevitably make the rod top-heavy. Three yards is the length of the casting-line, but never more than three and a half.

"You say 'the flies should be three in number.' Not always—there are exceptions, many exceptions. In confined streams, where there are bushes, weeds, &c., one fly is as much as can be managed or used. Also, in streams where the fish are very numerous, one fly is plenty, particularly with the light tackle, which a gentleman and an angler should use. In clear water, lakes and ponds, three flies are the proper number.

"Now to return to the casting-line. On a casting-line no loops of any kind should be used, because they are unnecessary; and every unnecessary bulk, or uneven surface, which may make a splash, or frighten fish, should be avoided. To the reel-line, splice a link of the strongest gut; that is, proportionate with the tapering gut of the casting-line, which is a fixture, until used up by constant cutting, when another is put on.

"Let the casting-line be nine feet, the largest and stoutest links at the top, graduating to the bottom. To the bottom or last link, *knot* the link upon which the tail or stretcher-fly is tied. Three feet from the end of the casting-line, before the tail-fly is put up, or three feet eight or nine inches from the tail-fly, use this knot:



Two feet from the first knot, have a similar knot. The ends of all the other knots, except the one which secures the tail-fly, tie neatly with waxed silk, as near the color of the casting-line as you can. The knot should be the 'water-knot.' Let the first dropper or drop-fly be tied on gut three and a half or four inches long, the second a shade longer. Upon the end of each link upon which the drop-fly is tied, let the knot be that in the cut. The slip-knot on the casting-line, as depicted in the plate, can be pulled open by catching the little projections on each side, and pulling them apart. I insert the knot end of the drop-fly between the opening or two links, and then pull the knot together, and the dropper hangs perpendicular. There is no more secure or neater knot; every cast tends to increase its security; and there is no contrivance whereby the drop-flies can work, or hang so well. The reason why we whip or tie the ends of all the knots save those for the droppers and tail-fly, is, that when fishing in stream or pond, if the projections of the knots are exposed, the casting-line will constantly become foul and heavy, by every floating piece of grass or stuff, which will adhere to the sharp projections of the knots.

"Objections may be made to knotting the tail-fly to the casting-line, and thus making it a fixture. The answer to this is, that the advantage is far greater than the disadvantage. One can in a moment slip out either or both his droppers, by drawing apart the knot, and insert other flies; or he can, as every man should, when fishing, have a perfect mounted casting-line 'all round his hat;' and it is only the work of a moment to cut the discarded casting-line from the stationary link attached to the reel-line, and tie on the substitute. Or one may

cut the casting-line in use close up to the knot which secures the tail-fly, and tie on another—the loss of gut is trifling—and when, by constant cutting, the link becomes short, he ties on a new one.

"There is one other remark worth mentioning. The tail-fly should be the heaviest, the first dropper should be less in size, and the hand-fly, or second dropper, less than the first; and let the angler be assured, that attention to these apparently minor matters tend to fill his creel and save his fly. This is the true idea of a casting-line. A man should be particular in his tackle, and he is as much entitled to credit for its neatness as for dexterity in its use.

ON THE USE OF THE ROD.

"Every angler should learn to use the rod with either hand; and no man is a finished, safe, expert, or self-saving angler who cannot use the left as well as the right hand. To say nothing about a sprained wrist, and consequent loss of sport during the season, or being obliged to cease fishing from the fatigue and weakness of one hand, there are certain winds, in some situations, when and where a cast cannot be made with the right hand.

"Again, it is important to be able to throw a fly in the teeth of the wind, which, when done properly, often lifts the very best fish. It is not difficult, but it is a little laborious, and needs practice. It is not accomplished either by the double or single turn; it is done by bringing the rod right up in front, avoiding, if possible, the wind taking the rod to the right or left. Now when the rod is almost straight, press the butt strong towards the body with the wrist, keeping the arm as close to the side as possible, until the tip comes about three-quarters straight against, or in the eye of the wind; and then run the arm out directly forward, turning the wrist, during the forward action, outside, or towards the right side. By this mode, which is more easily done than described, the line, which should be only of manageable length, will unfold, and display a pretty fair cast; at all events, the waves, or turbulent state of the water, will conceal the defective fall of the flies.

"Every angler should tie his own casting-line; no dependance can be placed on those purchased, for the reason that very few tackle-sel-

lers are practical fly-fishers, and do not know the necessity, and will not take the pains, of making a tapering line.

"A casting-line will cost seventy-five cents at the tackle store; made at home, they cost about eighteen cents. It is important then, on the score of economy, as well as success, that the angler should make his own casting-line.

"It is therefore important that the proper knots should be known by name, and how to make them.

"There are but three knots suitable for angling, to wit: the slip-knot, described in the cut above, which is only fit for the insertion of the drop-flies; the water-knot, and the knot, or mode of finishing a knot, which might be termed the 'finishing-knot.'

"The slip-knot need not be described—it is plain enough in the drawing.

"The water-knot is the most simple of all knots. It is the '*common knot*,' passing or turning the ends to be united twice round each other, and then pulling them together. It is only necessary to pass them twice round; it is enough, although some persons use three turns It is the smallest knot by which gut can be united. When the knot is pulled tight, then cut off the ends, leaving a little remaining for the whipping or fastening. The projecting ends should then be fastened with thin but strong silk, waxed with white wax. Every practical angler knows how to finish off, or secure the end of the silk. The silk is wound round the projecting and main gut, until within six or seven turns or rounds of the end of the projecting bit of gut; then turn the point of the silk towards the knot, and continue the winding around the end of the silk which has been turned towards the knot, until the winding is finished, then pull the end tight under the whipping, and the fastening is secure and invisible."

OF TROLLING FOR LAKE-TROUT

IN HAMILTON COUNTY, NEW-YORK.

(BY A SPECIAL CORRESPONDENT.)

I PROPOSE, in this connexion, to treat of this fine and exciting sport, describing 1st, The rod;
2nd, The reel;
3rd, The line,
4th, The leader, and train of hooks;
5th, The bait and flies;
6th, The bait-kettle;
7th, The boat and oarsman, or guide;
8th, The manner of striking the fish, when the bait is taken.
And lastly, 9th. How to play, and gaff the fish.

1st. THE ROD.—A mutual friend of ours, who writes occasionally for the "*Spirit*," and who is a most skilful troller, wrote an article which appeared in the "*Spirit*" in the fall of 1848, signed "M., Maspeth, Long Island," in which he gave a capital description on most of the above heads. I wish you had the paper, as it is all that is to be said on the subject.

The trolling-rod spoken of by you on page 327, would answer, to wit: the barbed rod. * * * had two of the most perfect trolling rods I have seen; they were made by Ben. Welch, of Cherry-street, and are all bamboo cane. I had one made by George Karr, of Grand-street, which I like very much; and I will describe it the best way I can, although it is no easy matter to describe on paper a rod of any kind:—Length from eleven to thirteen feet; butt of ash, thoroughly seasoned, about one and a quarter inches in diameter, or about as thick as an ordinary Bass-rod. The butt should be hollow, to contain spare

tips. The second, third and fourth joints should be bamboo, so that when the rod is put together, it will be about twelve feet.

The rod should have two spare tips; one should be stronger and shorter than the other, to vary the fishing according to the state of the weather, and circumstances.

The fourth or last joint, tip, should be about three feet, thinner, and more pliant than the spare tops which fit in the bored butt. The first spare top should be two feet long, stiffer and stronger than the original top. The second spare top should be about fourteen inches long, strong and stiff; and in heavy weather, this strong, stiff top will be the one to use.

Rod-making has been brought to such perfection, it would be a waste of time to give further instructions; but still I only know two men in this city who can make a true trolling-rod, viz:—Ben. Welch, of Cherry-street, and George Karr, of Grand-street, near Broadway.

Rings should never be used on rods of this character. The "rail-road" through which the line travels, constitutes one of the peculiarities of this rod. Rings interfere with, and impede the line, and should not be used. The guides used by Welch are the only true ones—they are neat, light, with a thin flat shank, about one-fourth of an inch in length, which is firmly secured on the different joints. There should be very few guides on the rod—five, I consider sufficient, exclusive of the metal case at the top of each tip. This metal case should have a rounded surface, perfectly smooth, and sufficiently large to allow the line to run without the slightest obstruction or friction.

Let me give one hint before I take leave of the rod. I recommend that all trolling-rods should have guides on both sides—that is, a guide on the opposite side of the other: *not on the butt*, but on all joints from the butt to the end; and why? In this kind of fishing there is powerful pressure on the rod; and the very best will, from hard work, become bent, and remain bent, and thus lose its elasticity. To obviate this, turn round the joints, slip the line through the spare guides, and in a few hours the rod is "all straight."

2nd. The Reel.—To give an explanation of this to you, would be absurd. I will simply say, that No. 3 is about the proper size for a trolling-rod, without stop, click, or multiplier. The line cannot run

off too free. According to my opinion, John Conroy can make the best reel in the world.

3rd. The Line.—One hundred yards is abundant. Twisted silk is the best line for trolling. I know they kink, when new; but very little use will put an end to it—*id est*, knock the kink out of it.

Plaited lines are very good and cheap, and do not kink; but they absorb the water, and do not run free from the rod.

A mixture of hair in lines, is my abomination. It is the most dangerous and uncertain stuff a man can use. You can never depend on it; the hairs will give way with but little strain; and when you hook the heaviest fish, the greater danger is to be apprehended. I hate them.

4th. The Leader and Train of Hooks.—This word "leader" goes against my grain. The old familiar English-Irish sound of "casting-line," has a charm for my ear, equalled only by the still, silent noise of

"Ballynahinch or Costello's flowing waters."

But let leader go for trolling.

Most trollers use twisted gut for a leader, with a small swivel attached to one end. The other end is fastened to the reel-line, either by loop or knot, but a knot is by far preferable. The leader should be two yards long—some good and old hands use three yards. I never use twisted gut. I prefer a leader of good round Salmon-gut.

The train of hooks is attached to the eye of the swivel, at the end of the leader. The train is made of five hooks, and made on the very best and most perfect gut, single. The strand upon which the hooks are tied, is fastened by a knot to another equally strong and perfect strand, which is fastened by a loop to the swivel at the end of the leader. Thus you have the rod, reel, line, leader, and train of hooks. Perhaps a sketch of the train of hooks will be better than an explanation. Here it is:

This train, you will perceive, is made of five hooks. The lip-hook

should be a size or two smaller than the tail-hooks—say No. 5 for the tail, No. 6 for the middle, and No. 7 for the lip. These hooks are joined shank to shank, with the gut between them, and then firmly tied with waxed silk. But I procured from Ireland a set of hooks welded or united together, and they are far superior to single hooks joined by tying together, for they frequently double up, and become very troublesome. George Karr, before named, can rig this kind of train better than any man in this city, as far as my experience goes.

5th. The Bait and Flies.—The proper bait is the Shiner, which can be plentifully procured in all the lakes of Hamilton county. They are taken with the smallest kind of hook, No. 12, with worm bait; and when secured, are put into the bait-kettle, and preserved until used. The mode of putting the Shiner on the train is simple: put the lip or single hook through the lip, the middle hook in the belly, the end hook in the tail.

Unlike Trout-fishing proper, I loop on my flies when trolling. About thirty-six inches from the Shiner I loop on the leader—a large fly; and thirty inches from that fly I loop a smaller-sized one, and then I am rigged to "throw out."

6th. The Bait-Kettle.—This is a most indispensable article for the troller—he can't get along without it. It should be made of strong tin, painted green outside and white inside. The bottom should be wider than the top, but sloping gradually. Conroy has now in his store some very good and complete; but there is one great improvement, *to have the handle lie or fall inside the lid.* I recommend a small gauze ladle, with a short handle, to take the bait from the kettle when required—it will save much trouble, and injury, if not death, to the "dear little creatures."

The kettle should be replenished with water every hour; and one unerring sign that the Shiner needs fresh water, is when he pokes his nose to the surface. When the fishing is over, sink the kettle in the shoal water, and secure it, so that it cannot be tossed about by "wind or weather."

7th. The Boat and Oarsman, or Guide.—Here you must trust to luck—"first come, first served." But any person going to the house

of John C. Holmes, at Lake Pleasant, will find good accommodation, and "honest John" will secure a good guide and a good boat; and from experience I can safely recommend Cowles, Batchellor, and Morrell, of Lake Pleasant, as faithful, honest, persevering, safe and skilful guides and oarsmen.

Trolling is solely done from the boat. The troller sits with his face to the stern; the oarsman in the middle, or rather near the bow, and rows slowly and gently along the lake; about one and a half or two miles an hour is the proper speed.

8th. The Manner of Striking the Fish when the Bait is Taken.—Should there be much wind, thirty-five yards of line is sufficient to run out—if calm, say forty-five or fifty. When a fish is felt, the tip of the rod should be eased off, or given to the fish, in order that he have time to take hold; then give a good surge of the rod, and you will rarely miss striking him. Should you be fishing with two rods, which is almost always the case, pass the other rod to the oarsman Never give the fish an inch, unless by actual compulsion; invariably keep him in hand—feel him at a distance, but still be kind and gentle, not rude or rough. Do not show the gaff until you know that the fish is "used up;" if a small fish, run the net *under* him; and if the fish is spent or exhausted, he will fall into it; but if he shows life, draw him *over* the net. If a large fish, use the gaff, which pass under him, with the point downwards; then turn it up inside, and strike as near the *shoulder* as possible. I say *shoulder* instead of *tail*.

I believe that I have now done with this branch; but let me say, that no good troller uses lead or sinker of any kind. I have seen it used, but used to the destruction of sport and tackle. Sinkers carry the hooks to the bottom, and there you stick either to root or rock.

When trolling, you take, on the average, more fine Brook Trout than Lake Trout. I think that two to one is correct.

One word as to the sporting quality of the Lake Trout. The nine pound and a quarter Trout, before mentioned, may perhaps be an exception; but I do affirm, that the Lake Trout is a fish of game, spirit, and endurance.

I have killed them from one to sixteen and a half pounds. The

sixteen and a half pound Lake Trout was hooked by me, on a single gut leader; from the time I struck him, till his capture, was one hour and forty-five minutes. During the first half-hour, he showed great bad temper, and kept the perspiration flowing off my head; he did sulk for half an hour, but it was a moving and a dragging sulk, unlike the Salmon; and during this sulk he took me along the lake for about a mile; I became fatigued, and bore so heavy on him that I got him near the surface, and from that time until his death was one continued run and fight. He had not the vivacity of the nine and a quarter pound fish, but still I had "my hands full," and was effectually "used up" when he was gaffed by Cowles, my guide.

There is another mode of fishing to which you have made no reference, and which I have never seen described or spoken of in any work upon angling. I mean "cross-fishing," as practised on the large Irish lakes; and although it affords great amusement, still it is a species of poaching, and should not be practised by the legitimate angler.

The cross-line consists of one hundred and fifty yards of strong line, say thin whip-cord, seventy-five yards of which is wound on a card, similar to a card used in trolling for Blue fish, and the other seventy-five yards on another or similar card. In the centre of the line, a flat, square cork, about an inch thick, five inches wide, and of the same length, is secured to a loop in the middle of the cork, and made perfectly stationary, but still so secured that the cork shall lie flat and even on the water. To twenty yards, on both sides of this cork, the flies are attached—that is, three feet from the cork, loop on the first fly, and so on, every alternate two yards, until eight or nine flies are looped on the line, on each side of the cork. The flies should be the usual lake-flies, tied on twisted, or very strong, Salmon-gut of about two feet in length.

Two boats are of course needed. One card is held by the person in one boat, and the other by him in the second boat. The line is then stretched out as the boats separate, until the hand-fly is distant about twenty yards from each boat. The boats are slowly rowed along, in parallel lines. The line should be kept taut, so that the flies skim or dance on the surface of the water. Each angler knows his own fish by the cork, and the person holding the card on the opposite side of the cork has no right to kill the fish which has been struck on the side

nearest to his friend. There is much art and tact necessary in this kind of angling. The friend who is not entitled to the fish has as much sport, and "work on hand," as the person in the opposite boat —he must play the fish with equal care—but the nicety is, in managing the flies. Suppose the fish has taken the fly next the cork—there are, then, say eight flies between the angler and the fish. Two modes can be adopted. Should the fish be small, when the hand-fly is drawn to the boat, it should be laid on the side, with the fly hanging about a foot outside the boat; and so on with each fly, until the fish is captured. Should the fish be large, this mode is dangerous; for, should the fish make a violent run, the flies laid over the side might get fast in the wood, and play the deuce. To obviate this, all the flies can be run up on the line, towards the fish—that is, when the first fly comes to hand, run the loop along the line until it meets the second fly, and so on, until you have all the flies between you and the fish, in, as it were, a heap. After the fish is killed, a few moments will suffice to re-arrange the tackle.

Upon Rackett Lake, Long Lake, Lake Piseco, and other large waters, this mode of fishing would afford great amusement; and the only objection to it is, that it is a deadly way of capturing fish. But it is not half so bad, and is in fact honorable and legitimate, when contrasted with the innumerable "infernal machines" used for the destruction of game of all kinds.

There is an advantage in trolling which I have omitted. You can lay the trolling-rod on the stern of the boat, and use the fly-rod for casting, and thus "kill two birds with one stone"—troll with one rod, and cast your fly with the other. In this way, I raised and killed with my light Trout-rod many of my best and bravest Brook Trout.

I will close this subject by stating, that from the 15th of May to the 15th of June, and from the 1st to the 20th of September, are the best seasons for trolling on the lakes in Hamilton county.

The "black fly" seldom appears before the 1st of June—he is a most infernal tormentor; but one consolation to the angler is, that, unlike the mosquito, he is a sound sleeper, and is never seen, heard, or felt at night. Every man going into the woods should carry a gauze net, sufficiently large to cover the hat and tie round the neck, to protect the face, ears and neck from the black fly.

SET-LINES FOR LAKE-FISHING.

I HAVE only to add to the above complete, and, I think, perfect description of lake trolling, the following account of the manner used in Seneca, and many of the other small lakes, for taking fish with the set-line.

It is not a sporting, but it is a very killing way of taking fish; and there is some fun, after all said and done, in making a haul.

First, the set-line is baited with live Minnows, Shiners, or—best—Lake Herring, *Coregonus Artedi*. Anchor one end of the line firmly near the shore, in fifteen feet water; thence run directly out into the lake from a quarter of a mile to two miles, with a very strong hempen cord, having short whip-cord bait-lines, with hooks armed on gimp attached at every sixteen feet; the depth varying from twenty-five to five hundred feet.

The same method is much used in Scotland, and off the coast of Newfoundland, for deep-sea fishing, and with immense success; the bait there being the Herring proper, or Capelin, and the depth from ten to fifty fathoms.

In the British Provinces this deep-sea line is known as the "bultow."

Whether for lake or deep-sea fishing, this is a very dirty, laborious, unscientific, and unsporting mode of killing fish; and there is nothing to recommend it but the immensity of *pot* to which it ministers.

ARTIFICIAL FLIES.

(See Frontispiece to Supplement.)

THE superiority of "fly-fishing" over every other mode of angling, cannot be questioned, even by the most ardent admirer of the float or ground-bait. The *natural* and acquired skill actually necessary, before any man can throw a "neat fly," is only known to those who have made this method of angling their study and amusement. I believe that no man was ever made a "fly-fisher" from written instruction.

The rudiments may be acquired from books; but a practical knowledge of the art can only be acquired by patience, perseverance, and *good temper*. All works on angling contain something on the subject; and if my angling friends do not find sufficient instruction in my "Fish and Fishing," they must be content to begin with old Isaak, and travel down to the last authority.

It is extremely difficult, if not impossible, to present a correct and satisfactory list of artificial Trout flies. Every angler has his own favorite fly, particularly if he is in the habit of fishing in one particular pond or stream. The fly which may be found most killing on Stump Pond, may not stir a fish in the adjoining water.

In 1848, the "ibis" was all the rage in Stump Pond; it was wholly worthless at Speonk and Mauritchez. The accompanying plate contains flies of acknowledged merit, and generally used in the waters of this State; and I feel assured, from my own experience, as well as from the accounts of others, that no angler can be at fault when his book is supplied with flies of the character described in the drawing.

I am indebted to Thomas Finnegan, of this city, for much valuable information in relation to the exact colors used in making the following described flies; and indeed the greater number of them have been prepared by him, and the coloring arranged under his supervision.

By turning to the plates, and number of each fly, the reader will,

from the following description, see the material of which it is composed, its color, quality and peculiar character.

No. 1. Red Palmer Hackle.—*Body*—Dark red colored mohair, ribbed with gold or silver twist. *Hackle*—Of the red cock, worked with red silk. *Hook*—No. 5, 6, or 7.

No. 2. Peacock Palmer Hackle.—*Body*—A full fibre of peacock herl. *Hackle*—Of a dusky red cock, worked with red silk. *Hook*—No. 5, or 6.

No. 3. Black Silver Palmer Hackle.—*Body*—a fibre from a black ostrich feather, ribbed with silver twist. *Hackle*—Black, wrapped over the whole body with black silk for fastenings. *Hook*—No. 5, 6, or 7.

No. 4. Yellow Palmer Hackle.—The *body* is made of white hackle dyed yellow. The hackle of yellow silk. *Hook*—No. 5, 6, or 7.

No. 5. Black Palmer Hackle.—The *body* of black ostrich's herl, wrapped with a black cock's hackle. *Hook*—No. 5, 6, or 7.

No. 6. Black Palmer Hackle Ribbed with Gold.—The *body* of peacock's herl, wrapped with a black cock's hackle, and ribbed with gold twist. *Hook*—No. 5, 6, or 7.

The flies from No. 1 to 6, inclusive, which I style "Palmer hackles," are known to every "fly-fisher" as most effective in taking Trout; and as they are intended to represent the larvæ or caterpillars of flies, as well as some of the insects themselves, it is evident that their size and color may be varied. In angling vocabulary, the terms "black hackle," "red hackle," &c., are almost invariably applied to all flies of the above character; and it may be, that the above addition of the term "Palmer," may be deemed by many good sportsmen to be an innovation upon old-established angling phraseology. I know that criticism should be avoided in the use of fly-fishing terms, which every man knows cannot be justified by any literary rule; but some angling terms are so glaringly absurd and contradictory, that it seems to me actually necessary to correct evident inconsistencies, when such corrections do not confound or mystify that piscatory learning which time has, as it were, authorised as an angling alphabet

In several works upon angling, the term "hackle" is variously applied. We find it synonymous with "palmer," which expresses an artificial fly and a caterpillar. We find instructions to prepare the "hackle" to make the fly; and again, we are instructed to fish with a "hackle" or a "palmer." Thus the angler is confounded. The "hackle" is at one moment a feather, and at the next a fly—the fly of one angler is the hackle of another; a hackle is nothing more than the feather of a bird, and a portion of the material which composes the palmer.

There is also some apparent inconsistency in the use of the term "palmer fly." The term "palmer," as I understand it, is only applicable when speaking of the "palmer worm;" but as this worm is destined to become a winged insect, the term "palmer fly" or "palmer hackle" is, according to my notion, a more expressive term than "hackle" or "palmer" alone. The palmer is the insect represented —the hackle is the material to form the representation.

The foregoing few general remarks I have deemed necessary—not from any desire to infringe upon old and perhaps well-established names, but for the purpose of inducing others to examine the subject.

A little research upon this apparently unimportant matter led me into a labyrinth, from which I have with difficulty escaped; and I am by no means assured that my views may not increase the mystification of our angling vocabulary.

No. 7. Green Drake or May Fly.—*Wings*—The mottled feather of the mallard dyed yellow, to stand rather erect and divided. *Body*—Yellow mohair, ribbed with peacock's herl and orange silk. *Legs*—Red ginger hackle. *Tail* forked with two or three hairs. *Hook*—No. 5, 6, or 7.

There are other modes of dressing this fly, but I prefer the above.

No. 8. Gray Drake.—*Wings*—The gray feather of a mallard, if not too dark, to stand erect. *Head*—A morsel of peacock's harl. *Body*—Fine down from a white pig, light gray camlet, or whitish gray ostrich herl, striped with deep maroon silk. *Tail* forked with two or three gray hairs. *Legs*—A grizzled hackle. *Hook*—No 5, 6, or 7.

The green or gray drake is not, so far as I can judge, an American

fly; still I have found both to be killing flies, from the middle of May to the close of June. Every angler who has fished in England and Ireland knows of their surprisingly attractive qualities; and that during the "green drake month" the Trout reject every kind of artificial and natural bait, for the "green or gray drake;" and that at no period of the Trout season are the fish so powerful, vigorous, and fine-flavored as when this apparently luxurious and sanative food appears on the streams and lakes.

If I am correct in saying that it is not an American fly, and consequently not an imitation of any existing American insect, and that it is still a killing artificial bait on American waters, then the position taken by some of the best anglers will hold to be true, that for the purpose of successful fly-fishing, it is unnecessary to imitate the natural insect.

It is necessary to say a word in relation to the mode of casting with those flies. The green drake is thrown in the usual way; but the action of the gray drake being entirely different from the green, the same mode of casting will not answer. Unlike the green drake, the gray drake does not *rest* on the water. His light on the water is momentary—"no sooner *on* than *off*." Therefore, the artificial gray drake should be thrown right over the Trout, and then lifted so as to imitate the rise and fall of the natural fly.

No. 9. The Cow-dung Fly.—*Wings*—The feather of a landrail, dressed a little longer than the body, to lie flat on the back. *Body*—Yellow wool, with a little brown fur, to give the body a dirty orange color; the body tolerably full. *Legs*—Ginger hackle, same color as the body. *Hook*—No. 6, 7, or 8.

This is my favorite fly. As a standard and universal fly-bait for Trout, I think that the Cow-dung should stand "A. No. 1." It is not much known to American anglers, and is rarely used on American waters.

The origin of the fly is not aquatic. It is found on the excrement of animals, particularly on that of the cow. In windy weather it is blown from the land to the water; and no bait is more greedily seized by the Trout. In March and April I use it as a tail-fly; in May and June as a dropper; and in July and August as a hand-fly. I regulate

the size of the fly according to the state of the wind and water. There are few flies so frequently murdered in dressing as the "cow-dung;" and there is no fly in the whole list which requires more care in shape and color.

No. 10. The Bee-Fly.—*Wings*—Feather, the pigeon's wing, dark. *Body*—Chenil of various colors, arranged in stripes in the following order: black, white, light yellow, white, black, white. *Legs*—Light black hackle.

No. 11. The Black Gnat.—*Wings*—Pale starling feather, or hen blackbird. *Body*—Black ostrich herl, or black worsted. *Hook*—No. 9, or 10.

This fly is generally dressed short and thick, as represented in the plate, and is classed among the "midge flies." In summer, when the water is clear and low, it is a good fly. In cloudy weather it may be used through the day; but in bright days, it is only useful in the morning and evening.

No. 12. Hare's Ear.—*Body*—Fur from a hare's ear. *Wings*—Feather of a starling's wing. *Legs*—Ginger cock's hackle. *Hook*—No. 6, 7, or 8.

From the first to the last day of the Trout season, I have found this fly to be a good killer and a favorite bait. It is not generally known to the American angler. Finnegan, before referred to, can tie this fly to perfection. I prefer to use it as a dropper.

No. 13. The Cock-tail.—*Wings*—The bright feather of a snipe's wing. *Body*—Yellow mohair. *Legs*.—Light black hackle. *Tail* forked with two long hairs.

Let the angler try this fly, and then judge of its quality. I include it in the list, because a friend has given it a good character.

No. 14. The "Whirling Dun."—*Body*—Blue fur and light brown mohair, wrapped with yellow silk. *Wings*—Snipe's feather, or the pale feather of a dun-colored bird. *Legs*—Blue cock's hackle. The tail of two hairs from a light-colored muff.

This fly takes its name from the whirling manner of its flight. It

can be used with success, from the middle of May to the first fortnight in July. With a good breeze, it is a killing fly.

No. 15. The Kingdom Fly.—*Wings*—A woodcock's feather. *Body*—White silk, striped with green. *Legs*—Red cock's hackle. *Hook*.—No. 6, 7, or 8.

No. 16. The "White Gnat."—*Wings*—A small white feather. *Body*—White silk. *Legs*—Red cock's hackle.

This is a delicate fly, and will kill in the evening of the summer months.

No. 17. The "Blue Dun."—*Wings*—From the blue part under the wing of a male widgeon; to stand erect. *Body*—Blue fur from the water-rat or squirrel. Blue mohair may be substituted for fur, if the true shade of the natural fly cannot be procured. *Legs*—A very fine hackle, as near the color of the body as possible. *Whisks*—Two blue hairs.

It is extremely difficult to procure the feather of the exact color of the natural fly, or sufficiently delicate for the wings of this *midge-fly*. It is a good fly early in the season.

No. 18. The "Red Ant."—*Wings*—Light starling's feather. *Body*—Peacock's herl made thick at the tail, and a ginger hackle for legs.

In warm, gloomy weather, without electric clouds, ant-flies are killing baits during the day; but they are nearly useless as a morning or evening fly.

No. 19. The "Gold Spinner."—*Body*—Orange silk, ribbed with gold twist. *Wings*—Starling's feather. *Legs*—Red hackle.

From June to the middle of July, this is a good general fly.

No. 20. The "White Moth."—*Wings*—The feather of a white owl. *Body*—White cotton, and a white cock's hackle wrapped round the body.

This is a night fly, and should be used in a dark, gloomy night. It requires an experienced hand to fish successfully with this fly. The moment the rise of the fish is heard, the angler should instantly strike.

Between 9 and 12 o'clock, one night in the month of July, 1847, I took eleven handsome fish with a "white moth." Care should be taken in the selection of your fishing ground. A position free from all obstruction is indispensable, to insure either pleasure or success.

No. 21. The "Governor."—*Wings*—A woodcock's feather. *Body*—A peacock's herl, tied with orange silk.

This is a good fly in June and July.

No. 22. The "March Brown."—*Wings*—Mottled feather from a partridge's tail, set upright. *Body*—Light hair and red squirrel's fur, mixed. *Legs*—a grizzled hackle. *Tail Whisks*—Two hairs, reddish brown.

This fly, like a great many others, is known by various names. I believe that in Wales, it is called the "cob-fly." In Ireland, it is called the "caughlan;" and in that country it is highly prized as a superior fly. Some good anglers make the body of hare's ear and yellow worsted. I have not found it to be a killing fly on Long Island, although in some streams in Connecticut, it did good service in the month of April.

No. 23. The Stone-Fly.—*Wings*—A mottled feather of the hen pheasant, or the dark gray feather of the mallard, inclined to red—to be dressed rather long. *Body*—Dark brown fur, or the dark part of a hare's ear, mixed with yellow camlet or mohair. *Legs*—A few laps of a grizzled cock's hackle; and in the finishing, two dark hairs are frequently used for the antennæ, or feelers.

The angling history of this fly is full of interest; but as I merely propose to give a list of such flies as experience justifies me in recommending, together with a statement of the materials, colors, &c., of which they are formed, I will in this place simply refer my readers to the account given by Cotton, of this fly; but I cannot refrain from expressing my unqualified dissent from the remarks in the "North Country Angler," in relation to the natural history of this fly; and it is to me a matter of astonishment, that Mr. Daniel, in his great work which treats on fishing, has fallen into great error in reference to the stone-fly.

No. 24. The Willow-Fly.—*Wings*—A dark grizzled cock's hackle. *Body*—Blue squirrel's fur, mixed with yellow mohair.

This fly appears very late in the season, and is a favorite with some good anglers.

I have thus gone through the catalogue or list of flies in the colored plate, but I do not desire to be understood as intimating that this list contains a specimen of *all* the best killing flies.

Every angler has his own peculiar notion in regard to the best fly; and the difficulty of presenting a perfect catalogue, will be very apparent, when it is considered that there are upwards of one hundred and twenty-five flies which compose the list of various writers; and as the *name* of the fly of one writer bears a different name and description from that of another, it is more than probable that the name and description of some of the flies in my list may not be in accordance with the views and opinions of many old and experienced anglers.

It is a mooted question among the very best "fly-fishers," whether an exact representation of the living insect, is necessary to insure success in angling with the fly. The Scotch flies are not imitations of living insects; and the best anglers in that country maintain the opinion that it is absolutely useless and unnecessary to imitate any insect, either winged or otherwise; and I find that Professor Wilson advocates the inutility of such imitations.

Professer Rennie says that "the aim of the angler ought to be, to have his artificial fly calculated, by its form and colors, to attract the notice of the fish; in which case he has a much greater chance of success, than by making the greatest efforts to imitate any particular species of fly."

The opinion of such authorities tends to shake old settled notions; and although I invariably endeavor, when dressing a fly, to imitate the living insect, still I have seen nondescript flies beat all the palmer hackles, and the most *life-like* flies that ever graced a casting-line.

I shall leave the subject where I found it—in doubt—trusting that some more experienced hand, and lover of the art, will, ere long, enlighten the angling community, not only upon this branch of the subject, but upon the "fly" in general. Every distinct insect has a history full of interest and instruction; and although some valuable

treatises have been published, which depict the insects and their types in their natural colors, still a compilation of all that is instructive, with such additional information as research and experience may procure, would make a volume of deep interest to the naturalist and the angler.

DESCRIPTION OF SALMON AND LAKE TROUT FLIES.

Plate to face page 224— body of work.

The Salmon Flies three in number. Upper row, from left to right.

Largest Fly, No. 1.—Blue worsted head; black hackle body, with silver thread; upper wings, speckled turkey; broad wing, bright golden pheasant; green peacock herls, blue-jay and red hackle legs; bird of paradise tail; scarlet-dyed antennæ.

Middle Fly.—Red worsted head; ruffed grouse hackle and blue-geai wings; green peacock herl; red hackle body; ruffed grouse hackle legs; orange silk tuft; bird of paradise tail; blue macaw antennæ.

Third Fly.—Green peacock harl head; speckled turkey and blue geai wings, with copper peacock's herl; red hackle legs; blue floss-silk body; bird of paradise tail.

DESCRIPTION OF LAKE TROUT FLIES.

Plate to face page 224—body of work.

Left-hand Fly, Lower Row, No. 2.—Black floss silk head; brown peacock's wing; red hackle legs; copper peacock's herl body; orange worsted tuft.

RIGHT-HAND.—Blue worsted head; ruffed grouse upper wings; golden pheasant under wings; brown cock's hackle legs; pink silk body, with gold twist; bird of paradise tail; green peacock's herl antennæ.

DESCRIPTION OF TROUT FLIES.

To face page 253—body of work.

UPPER ROW, FIRST FLY TO LEFT-HAND.—Black cock's hackle, dark blue worsted body.

SECOND.—Scarlet ibis wings; scarlet silk body; silver twist.

THIRD.—Green peacock's herl wings; ruffed grouse hackle legs; orange silk body; green peacock herl tuft.

FOURTH—Cock a bondhu hackle; red silk body; silver thread.

FIFTH.—Cock a bondhu hackle; green worsted body.

SIXTH.—White miller; black silk head; white owl wings; white ostrich legs; white chenil body.

SECOND ROW, FIRST TO THE LEFT.—BEE.—Gray pigeon wings; black and yellow silk body.

SECOND.—Green drake; Mallard's speckled wing; light brown hackle legs; pale brown mohair body; tail, three black horse-hairs.

THIRD.—Black midge; gray goose wings; black chenil body.

THIRD ROW, FIRST TO THE LEFT.—Brown turkey's wing; cock a bondhu hackle legs; red worsted body; speckled mallard tail.

SECOND.—Snipe's wing; gray mouse body; ruffed grouse hackle legs; speckled mallard tail.

FOURTH ROW, FIRST TO THE LEFT.—Yellow dyed hackle wings; yellow worsted body; silver twist.

SECOND.—Furnace hackles; green worsted body.

TABLE OF DEPTHS, BAITS, HOW TO STRIKE AND KILL.

NAME OF FISH.	DEPTH OF WATER.	HOW NEAR BOTTOM.	MOVING OR STILL BAIT.	HOW TO STRIKE.	HOW TO PLAY.
Striped Bass,	From 4 to 25 feet.	Within a foot or two of bottom.	Stationary, unless trolling for with rod, or squid.	Strike quickly.	Kill as quickly as he will let you.
Weak Fish,	" 10 to 35 feet.	Within two feet of bottom.	Stationary.	Strike quickly.	Kill as quickly as he will let you.
King Fish,	" 10 to 35 feet.	Not above a foot from bottom.	Stationary.	Strike quickly.	Kill as quickly as he will let you.
Sea Bass,	" 5 to 50 fathom.	Three feet from bottom.	Stationary.	Strike quickly.	Pull by main force.
Black Fish,	" 5 to 50 feet	On the bottom.	Stationary.	Strike quickly.	Don't give an inch.
Sheep Fish,	16 feet.	On the bottom.	Stationary.	Let him run and strike himself.	Pull up by force, if you can.
Black Drum,	8 feet and over.	On the bottom.	Stationary.	Let him run and strike himself.	Kill, if you can.
Porgee,	25 to 100 feet.	Off the bottom.	Stationary.	Strike quickly.	Pull up immediately.

TABLE OF TACKLE, AND AVERAGE WEIGHT.

NAME OF FISH.	WHAT ROD AND LINE.	WHAT SNOOD.	WHAT HOOK.	WHAT SINKER.	WHAT WEIGHT.
Striped Bass,	Trolling-rod, reel and hemp line, or squid-line without rod.	Gut.	No 1 to 4 Kirby.	Enough to keep bait stationary, according to tide.	20 to 28 lbs., with rod, up to 50, with squid.
Weak Fish,	Trolling-rod, reel and hemp line.	Gut.	No. 0 to 1 Kirby.	Do. do.	½ to 10 lbs., rod.
King Fish,	Trolling-rod, reel and hemp line.	Gut.	No. 4 Kirby or Limerick.	Do. do.	½ to 2 lbs., rod.
Black Fish,	Trolling-rod, reel and hemp line.	Gut.	No. 2 Black-fish.	Enough to keep bait stationary *on bottom.*	1 to 16 lbs.
Sea Bass,	Stout hemp drop-line.	None.	No. 2 Kirby.	Half pound.	1 to 10 lbs.
Sheep's-head,	Stout hemp drop-line, or stout rod, hemp line and reel.	None, or Gimp.	No. 0 to 1 Black-fish.	Enough to keep bait on bottom.	5 to 15 lbs., average 10 lbs.
Porgee,	Drop-line.	None.	No. 0 to 1 Black-fish.	Half pound.	¾ to 2 lbs.
Drum,	Drop-line, or strong rod and reel.	None, or Gut.	No. 0 to 1 Black-fish.	Enough to keep bait on bottom.	10 to 60 lbs.

SEA FISHING.

TABLE OF SPRING, SUMMER AND AUTUMN BAITS.—TIMES OF TIDE AND DAY.

NAME OF FISH.	BEST SPRING BAIT.	BEST SUMMER BAIT.	BEST AUTUMN BAIT.	TIME OF DAY.	TIME OF TIDE.
Striped Bass,	Shad Roe in rivers, Live Bait, Trolling, or Red Ibis Fly.	Shrimp, Shedder, Crab, soft Crab.	Shrimp, Shedder Crab, soft Crab.	Personally, I believe one time is as good as another. But all men have their fancies.	Some persons prefer the turns of the tides; some high or low slack water. I think there is no choice except to keep the proper depth of water.
Weak Fish,	None.	Shrimp.	Shrimp.		
King Fish,	None.	Crab.	None.		
Black Fish,	Soft Clam, Crab, Shrimp, Fiddlers.	Soft Clam, Crab, Shrimp, Fiddlers,	Soft Clam, Crab, Shrimp, Fiddlers.		
Sea Bass,	Rockaway or soft Clams opened.	As in Spring.	As in Spring.		
Sheep's-Head,	Muscle or Clam, not opened.	As in Spring.	As in Spring.		
Porgees,	Hard Clam cut Bait.	As in Spring.	As in Spring.		
Sea Perch,	Shrimp.	As in Spring.	As in Spring.		

Be it observed, that I do not note Mackarel, because I do not regard him as game; and secondly, that no sportsman is presumed to catch Drum or Porgees if he can help it.